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# THE ROLE OF GLOBAL FINANCE IN THE PROVISIONING OF SOCIAL INFRASTRUCTURE AND THE WELFARE STATE

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### EXECUTIVE SUMMARY

*This paper aims to identify and investigate how financialisation has influenced the tax revenues in Europe by lowering tax rates and decreasing productive investments, which have changed the provision and the investment pattern in public social infrastructure. The paper first shows that the EU economies have increasingly been financialised according to some of the indicators of financialisation, specifically the share of FIRE (finance, insurance, and real estate) value added in GDP, FIRE's share of employment in total employment, total debt in non-financial corporations, and capital account regulations. According to other indicators of financialisation such as property income received in non-financial firms' value added, household indebtedness, and volume of stocks traded/GDP, the EU countries financialised until 2008; however, the financialisation trend slightly declined following the 2008 global economic crisis and the Eurozone crisis.*

*The paper also shows that the growth of public education and healthcare expenditures in the EU declined through the 1990s and 2000s. The slowdown in the growth of public education and healthcare expenditures is noticeable, especially following the start of the Eurozone crisis. This paper discusses the role of financialisation in the making of the Eurozone crisis and shows that the Eurozone crisis led to austerity measures including significant cuts in public education and*

healthcare investment in the Southern European countries- Greece, Italy, Portugal, Spain, and Cyprus.

To examine the causal relationship between financialisation and public social investment in the EU-28, the paper conducts an econometric analysis for 1991–2017. Specifically, the paper examines the impact of the value added in the FIRE sector/GDP, domestic credit to private sector/GDP, total debt in non-financial corporations/GDP, household debt/GDP, and property income (interest, rent, dividend) received by non-financial firms as a share of their value added to the real growth of public healthcare and education expenditures. The econometric analysis shows that financialisation reduced the growth of GDP, tax revenues as a share of GDP, and hence, the growth of tax revenues in the EU-28 countries. The decline in the growth of tax revenues also led to austerity measures and lowered growth of public expenditures in education and healthcare. Estimations based on different measures of financialisation find that a standard deviation increase in a measure of financialisation reduced the yearly growth in public healthcare expenditures between 0.56 and 1.19 percentage points. A standard deviation in a measure of financialisation pulled down the yearly growth in public education expenditures also between 0.56 and 1.19 percentage points. The negative impact of financialisation is larger on the growth in public primary and secondary school expenditures.

Last, the paper discusses whether financialisation could create new schemes to replace the public social expenditures. For this purpose, the paper focuses on the role of student loans in higher education in the United Kingdom and private health insurance schemes in the Netherlands and Germany. Following the introduction of tuition fees supported by student loans, the enrolment rates in tertiary education in the UK have stagnated, while the student debt has been geometrically rising. The student debt/GDP in the UK increased from 0.67% in 2002/03 to 2.63% in 2011/12 and to 5.75% in 2017/18 following the higher education reforms.

The paper also shows that private healthcare insurance schemes did not lead to a significant success in the Netherlands and Germany. In the Netherlands, the healthcare system is entirely based on private insurance schemes, and in Germany higher-income individuals can choose between public and private health insurance schemes. Although the per capita healthcare expenditures are significantly higher in the Netherlands than in the EU-15, life expectancy is lower than the EU-15 average. On the other hand, empirical evidence from Germany showed that the dual system generated an ‘adverse selection’ problem, since more healthy individuals were more likely to switch to the private insurance system (Panthöfer, 2016) and the less healthy were more likely to switch to the public (Grunow and Nuscheler, 2014). The ‘adverse selection’ problem left the public insurance system in Germany with relatively unhealthy individuals and increased costs.

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## **Keywords**

Financialisation, healthcare, education, Eurozone crisis

## **JEL Codes**

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## 1. Introduction

In the post-1980 period, the European countries experienced a rising share of financial activities and incomes and a growing influence of the financial sector on non-financial firms and households, which is known as ‘financialisation.’ As a part of financialisation, the GDP and employment shares of the financial, insurance, and real estate (FIRE) sector, the property revenues of non-financial companies in their value added, the domestic credit provided to private sector, indebtedness of non-financial firms, and indebtedness of households increased. Moreover, the capital flows were significantly deregulated in countries that are currently part of the EU-28<sup>1</sup> (Figures 1–8).

The growth in tax revenues in the EU-28 also slightly declined between 1990 and 2008. However, the growth in tax revenues collapsed following the Eurozone crisis and the slowdown in the European economies, to which financialisation in Europe contributed (Carballo-Cruz, 2011; Barradas et. al, 2018). The decline in the growth of tax revenues was followed by severe austerity measures in the public education and healthcare sectors. The austerity cuts in public education and healthcare were especially noticeable in the Southern European economies (Cyprus, Greece, Italy, Portugal, and Spain) that were most affected by the crisis.

This paper aims to examine the impact of financialisation on public education and healthcare expenditures in the European Union. Financialisation in Europe is an impediment to the growth of public social spending through decreasing growth of tax revenues. Using an econometric analysis, this study finds that financialisation reduced GDP growth and also lowered taxes collected as a share of GDP. These two factors had a negative combined effect on the growth of tax revenues in the EU. The results also show that lower growth in tax revenues reduced the growth of public healthcare expenditures and the growth of public education expenditures, particularly for primary and secondary education. Several previous studies empirically examine the impact of financialisation on capital accumulation (e.g., Orhangazi, 2008; Tori and Onaran, 2018, 2019), inequality (e.g., Kohler, Guschanski and Stockhammer, 2019; Stockhammer, 2017), and tax revenues (Tomaskovic-Devey, Lin and Meyers, 2015). However, this paper is the first study that predicts the impact of financialisation on public social expenditures using an econometric analysis.

Last, following a group of studies that approach financialisation by focusing on the ‘financialisation of the everyday’ (van der Zwan, 2004), the paper examines three cases in which the welfare state was replaced by financial products. The paper discusses the introduction of tuition fees in higher education with the support of student loans in the UK and the cases of mandatory private health insurance schemes in the Netherlands and Germany.

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<sup>1</sup> The paper examines the impact of financialisation on the EU-28 countries; nevertheless, not all the countries were part of the European Union during the examined period. Indeed, Denmark, Ireland, and the United Kingdom in 1973; Greece in 1981; Portugal and Spain in 1986; Austria, Finland, and Sweden in 1995; Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia in 2004; Bulgaria and Romania in 2007; and Croatia in 2013 became EU members. The United Kingdom is expected to exit from the European Union by the end of January 2020 that this paper is published.

The rest of the paper proceeds as follows. The next section discusses the different aspects of financialisation and exhibits the trend of financialisation in the European Union countries. The third section shows and discusses the trends in public social expenditures and tax revenues in the EU countries. The fourth section theoretically discusses the channels through which financialisation would affect tax revenues. The fifth section empirically tests the impact of five different measures of financialisation on the growth of public education and healthcare expenditures through tax revenues. The sixth section discusses the impact of tuition fees and student loans on higher education in the United Kingdom and also the effects of private health insurance schemes in the Netherlands and Germany. The last section concludes and discusses the policy implications of the paper's findings.

## 2. An overview of financialisation in the European Union

‘Financialisation’ broadly refers to the rising share of financial activities associated with the growing financial sector and also the influence of those financial activities in the non-financial sector’s and households’ decisions and incomes. According to the widely followed definition<sup>2</sup> of Gerald A. Epstein (2005), financialisation is “the increasing role of financial motives, financial markets, financial actors, and financial institutions in the operation of the domestic and international economies.” Consistent with the broad definition of financialisation, financialisation is measured by the size of the financial and/or FIRE (finance, insurance, and real estate) sector (Krippner, 2005; Hein et. al., 2017; Hein et. al., 2018), the volume of financial transactions and private debt held by and/or credits given to non-financial firms (Palley, 2013; Davis, 2016; Karwowski and Stockhammer, 2017) and households (Lapavitsas and Powell, 2013; Kim, 2013), financial activities and incomes of non-financial firms and households (Stockhammer, 2004; Krippner, 2005; Orhangazi, 2008; Dünhaupt, 2016), and the extent of deregulations in the financial markets (Kohler, Guschanski and Stockhammer, 2019).

Figures 1–8 below measure the trends in financialisation in the European Union using eight different indicators. The figures mainly reflect that the role of finance in the EU increased between 1970 and 2008. According to some of the indicators, financialisation, including FIRE’s share of value added in GDP, FIRE’s share of employment in total employment, indebtedness in non-financial corporations as a share of GDP, and capital account regulations, the growth of financialisation stagnated following the global economic crisis in 2008 and the Eurozone crisis. According to the other indicators of financialisation, including property income received as a share of non-financial firms’ value added, indebtedness in the non-financial sector, household indebtedness, and volume of stocks traded/GDP, the level of financialisation slightly declined in the post-2008 period.

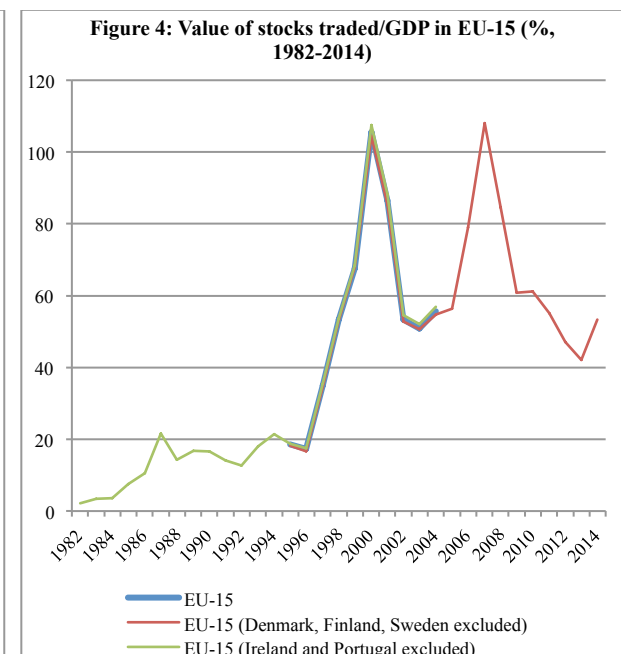
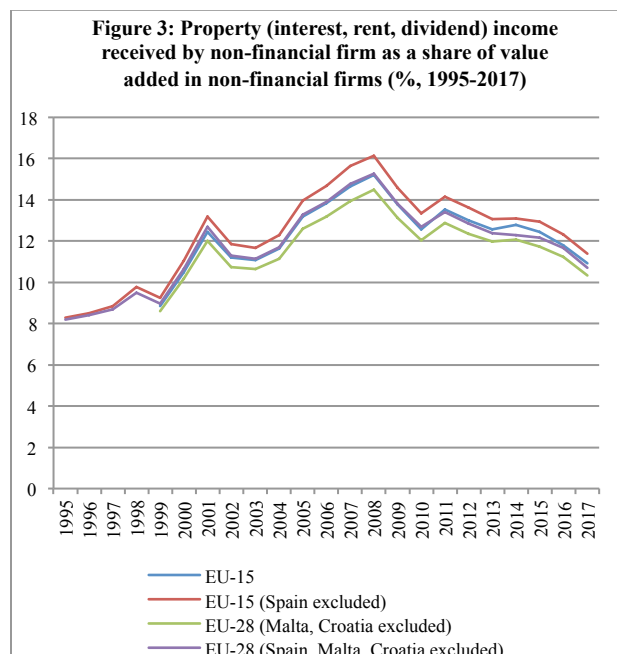
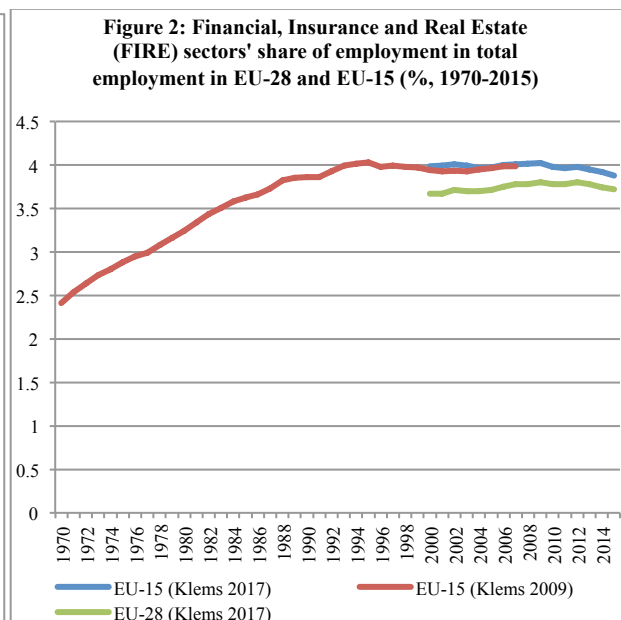
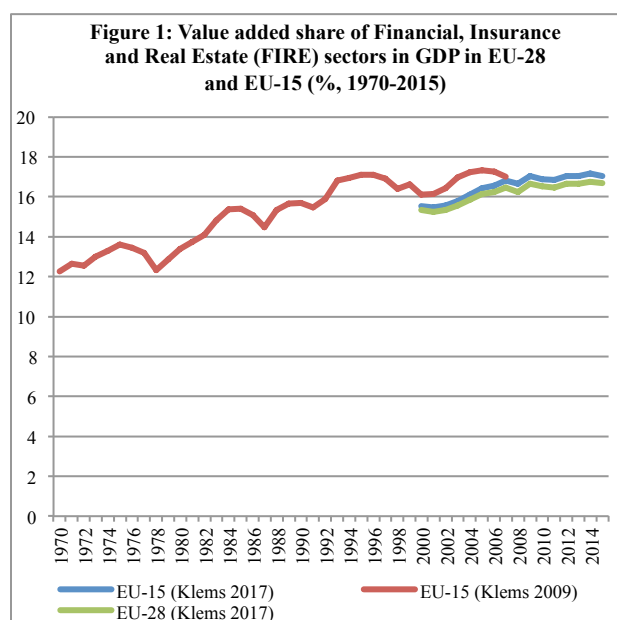
### *i) FIRE (finance, insurance, and real estate) sector’s value-added share in GDP and FIRE sector’s share in total employment*

FIRE’s share of value added in the EU-15 increased around 5 percentage points from 1978 to 1996, and it fluctuated in the 15–17% range between 1996 and 2015 (Figure 1). In the EU-28 area, FIRE’s value-added share in GDP increased by 1.3 percentage points in 2000–2015. Similarly, Figure 2 shows that the employment share of FIRE in the EU-15 increased from 2.4% to 4.0% between 1970 and 1995, and it did not significantly change in the post-1995 period. Figure 2 also exhibits that the employment share of FIRE in the EU-28 did not significantly change between 2000 and 2015. In summary, the financial, insurance, and real estate (FIRE) sector became more significant in the EU economies between 1978 and 1995; however, the

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<sup>2</sup> Epstein (2005)’s definition is widely followed in the financialisation literature, as Epstein’s book chapter is one of the earliest works that used the term ‘financialisation.’ Epstein’s definition quoted in this paper was previously quoted by 427 other studies, and Epstein’s book chapter that includes this definition received over 2,000 citations according to Google Scholar (2019).

value-added share and employment shares of FIRE in GDP and total employment did not significantly change in the post-1995 period.



Notes: Data for the figures reflect the values for the whole area indicated. Several countries are excluded from data due to missing data in the indicated countries. Figure 1 and Figure 2 are the author's calculations based on EU Klems (2009) and EU Klems (2018). Figure 3 is author's calculations based on Eurostat (2019). The property income includes interest, distributed income of corporations (including dividends) and rent incomes received by non-financial corporations. Figure 4 is author's calculations based on World Bank's (2019) World Development Indicators.

### *ii) Property income received by non-financial firms*

The non-financial firms in the EU-15 and the EU-28 increased their financial activities between 1995 and 2008. However, the financial activities of non-financial firms slightly declined post-2008. Figure 3 reflects the share of received property incomes in non-financial firms' value added. The property income includes interest, distributed income of corporations (including dividends), and rent incomes received by non-financial corporations. According to the calculations based on Eurostat (2019), from 1995 to 2008, the share of property income in non-financial corporations' value added increased both in the EU-15 and the EU-28. Property income's share declined in the post-2008 period; however, in 2017 it was still above the level in 1995. The trend in Figure 3 is consistent with Tori and Onaran's (2019) calculations based on firm-level data. Tori and Onaran (2019) show that total financial profits as a share of fixed assets (%) in non-financial corporations in EU-15 increased between 1995 to 2007 and declined following the economic crisis in 2008, but it was still above the level in 1995 by 2017.

The share of property incomes in non-financial corporations' value added cannot be calculated for pre-1995 due to missing data in Eurostat for EU-28 countries. However, the data for Sweden and France gives us an idea of the trend for property incomes in non-financial corporations. In Sweden, received property incomes' share in non-financial corporations' value added increased from 9.4% in 1975 to 27.8% in 1995, reached 40.8% in 2007, and declined back to 27.3% by 2017. Similarly, in France, property incomes' share in non-financial corporations' value added increased from 7.7% to 13.9% between 1978 and 1995, reached 30.4% in 2008, and dropped down to 22.4% in 2017.

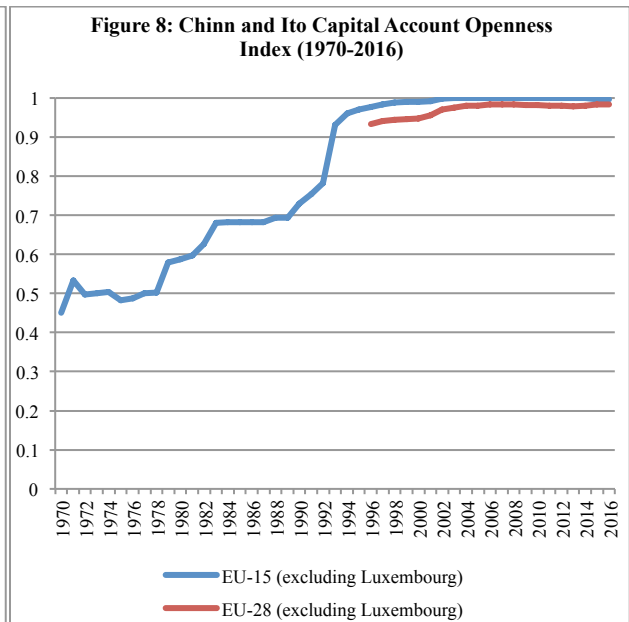
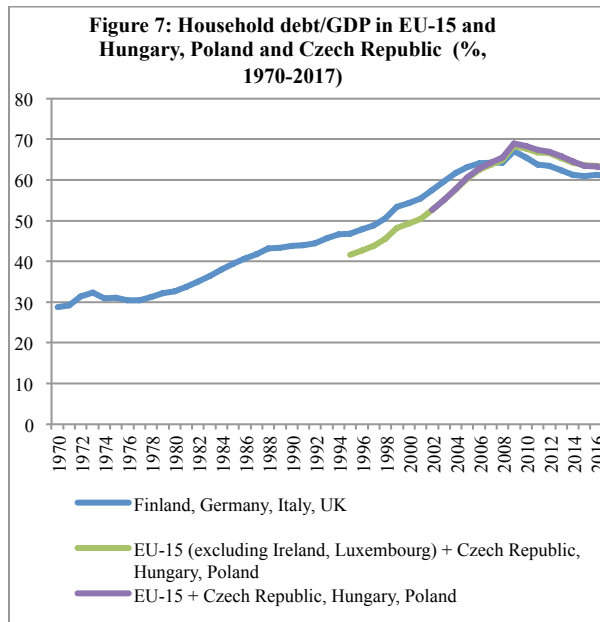
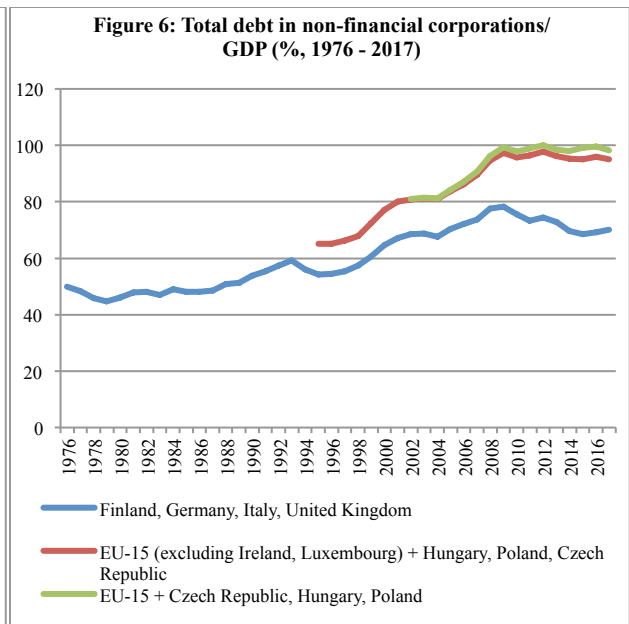
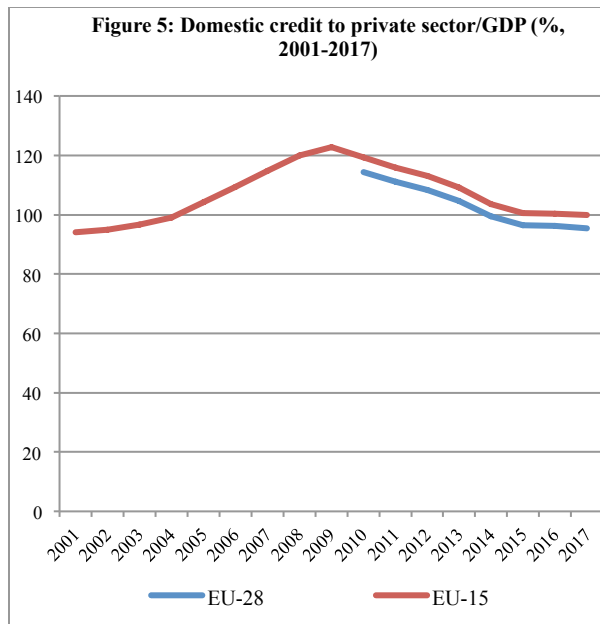
### *iii) Volume of stocks traded*

Figure 4 shows the total value of stocks traded as a share of GDP (%) in the EU-15 area, which is an indicator of financial activities of both financial and non-financial corporations. Total value of stocks traded/GDP (%) on average followed a positive trend between 1982 and 2007 in EU-15 with two peaks in 2000 and 2007. Following the global economic crisis in 2008, the total value of stocks traded as a share of GDP (%) also declined until 2013 and slightly bounced back in 2014.

### *iv) Domestic credits provided to private sector by financial corporations*

Figure 5 exhibits that the credits to the private sector expanded until the start of the Eurozone crisis and declined in post-2009 in the EU countries. Figure 5 shows that the domestic credit to private sector/GDP (%) in the EU-28 and the EU-15 increased between 2001 and 2009 and declined after 2009.





Notes: Data for the figures reflect the values for the whole area indicated. Indicated countries are excluded from data due to missing data. Figure 5 is author's calculations based on the World Bank's (2019) World Development Indicators. Figure 6 and Figure 7 are author's calculations based on Bank for International Settlements (2019). Figure 8 is author's calculations based on Chinn and Ito (2018) and reflects the GDP weighted average of Chinn and Ito Capital Account Openness Index for listed country groups.

*v) Indebtedness in private non-financial corporations*

Figure 6 shows the debt in non-financial corporations as a share of GDP (%). The data for the pre-1995 period is limited for most of the EU economies. However, the blue line in Figure 6 shows that debt in non-financial corporations/GDP increased slightly between 1976 and 1995 in

the area covering Finland, Germany, Italy, and the UK. The red line on the EU-15 (excluding Luxembourg and Ireland) and the Czech Republic, Hungary, and Poland hints that indebtedness in private non-financial corporations started to increase significantly in 1998 and the rise continued until 2008. The green line on the EU-15 and the Czech Republic, Hungary, and Poland shows that the indebtedness in private non-financial corporations as a share of GDP stagnated and did not significantly change (declined only by 1.1 percentage points) in the post-2009 period.

*vi) Household indebtedness*

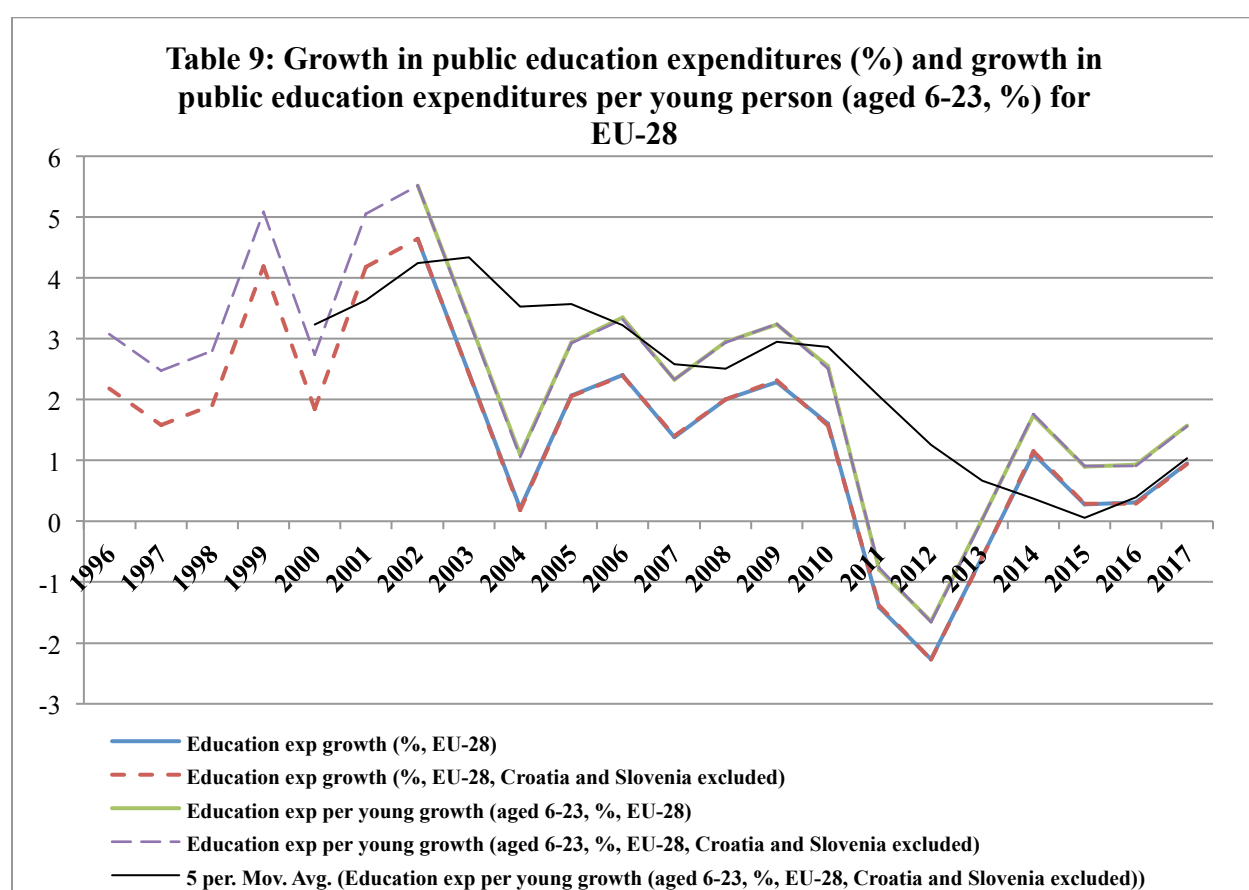
The data is also limited for household indebtedness; however, we see a trend similar to private non-financial sector debt for an area of four European countries with available long-term data. In 1970–2009, household debt as a share of GDP (%) increased by 40 percentage points in the area of four EU economies (Finland, Germany, Italy, UK), and it slightly declined in the post-2009 period (Figure 7). The trend is consistent with 1994–2017 data on the household indebtedness in the EU-15 and the Czech Republic, Hungary, and Poland.

*vii) Capital account regulations*

Last, Chinn and Ito's Capital Account Openness Index shows that capital accounts in the European Union became increasingly open (Figure 8). According to the Chinn and Ito Index, EU-15 countries experienced significant capital account deregulations in two waves, during 1978–1983 and 1988–1993. The Chinn and Ito Index for EU-15 converged close to its maximum level (Chinn and Ito Index = 1) in the mid-2000s. The Chinn and Ito Index for the EU-28 area also converged close to its maximum level in the mid-2000s and stayed at this level (0.980–0.983) throughout the post-2008 period.

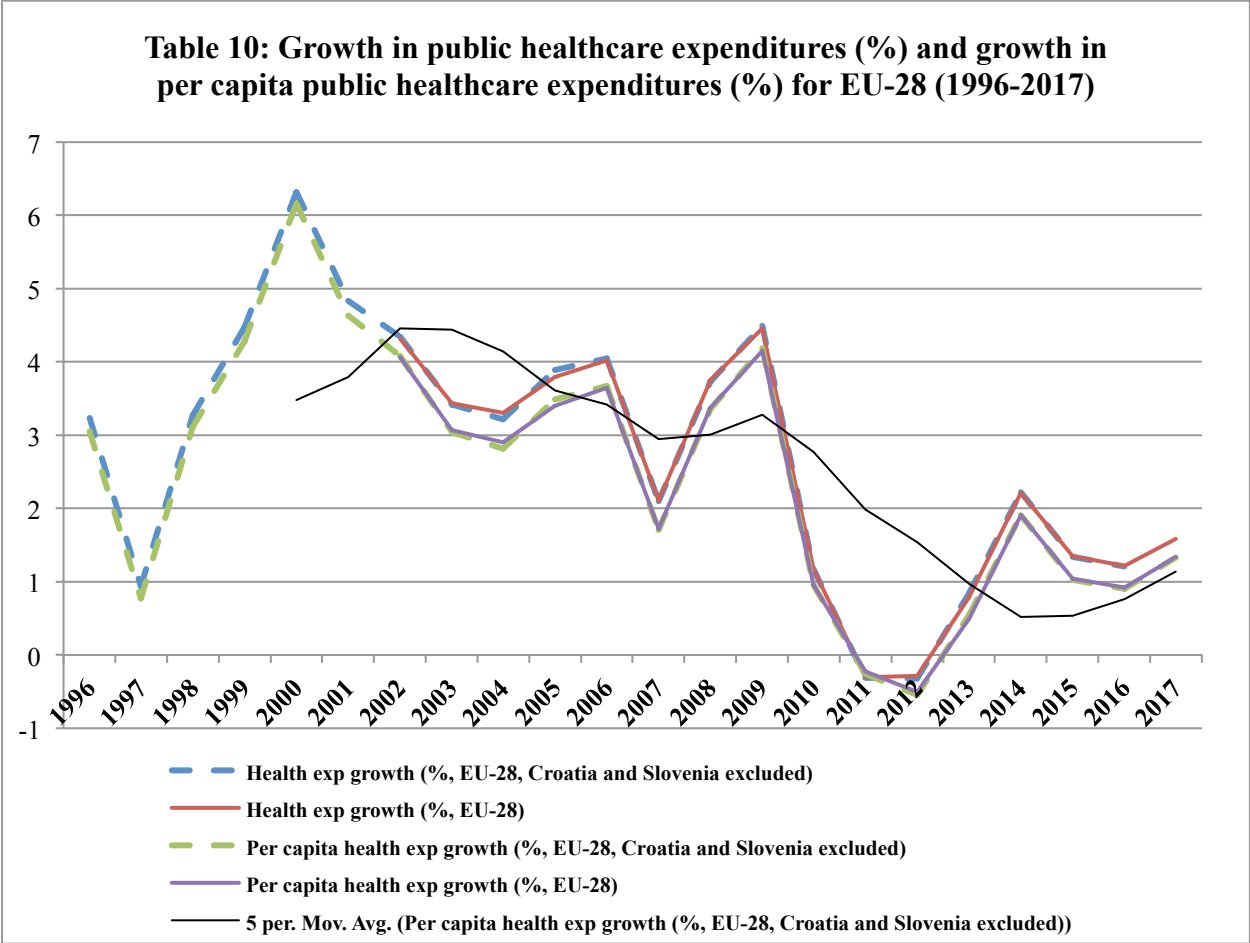
### 3. An overview of growth in social spending and taxation in the European Union

This section examines the general trends in the growth of public expenditures in healthcare and education in the European Union. The growth rate of public healthcare and education expenditures are driven by change in the share of public social expenditures in GDP and GDP growth rates. The shares of public healthcare and education expenditures in GDP might be misleading figures for our purposes, since they do not capture financialisation's impact on social expenditures through economic growth. Indeed, financialisation's possible negative effects on the private sector might raise the shares of public healthcare and education expenditures in GDP by keeping the value added in the other components of GDP (e.g., private industry and services sectors) at lower levels.



Notes: Author's own calculations based on Eurostat (2019), the World Bank's (2019) World Development Indicators, and UN-DESA's (2018) World Population Prospects 2017. The growth in the public education expenditures measure reflects the real growth and is calculated using GDP (constant 2010 US\$) multiplied by share of education expenditures in GDP. The population for ages 6–23 is listed for every 5 years. The yearly population growth for ages 6–23 is assumed to be constant over the 5-year periods. For 2016 and 2017, the population growth for ages 6–23 in 2010–2015 is used due to missing observation. Data for the figures reflects the values for the whole area indicated. Indicated countries are excluded from the data due to missing data. The moving average line shows the arithmetic mean of current data and past one-to-four-year lags.

Figure 9 shows the growth in public education expenditures for 1996–2017 in the region that is currently part of the EU-28. Due to lack of data availability, the red dashed line shows the growth in public education expenditures for 1996–2017 in the EU-28 countries excluding Croatia and Slovenia. The blue line shows the growth in public education expenditures in the EU-28 countries for 2002–2017 and overall reflects a very similar trend with the red dashed line. Overall, the growth in public education expenditures in the EU fluctuated until 2009 and significantly declined following the Eurozone crisis and slowdown of European economies, which is related to financialisation as will be discussed in the following section.



Notes: Author’s own calculations based on Eurostat (2019), World Bank’s (2019) World Development Indicators and UN-DESA’s (2018) World Population Prospects 2017. The growth in public healthcare expenditures measure shows the real growth and is calculated using GDP (constant 2010 US\$) multiplied by share of healthcare expenditures in GDP. Data for the figures reflect the values for the whole area indicated. Indicated countries are excluded from data due to missing data. The moving average line shows the arithmetic mean of current data and past one to four year lags.

In Figure 9, the green line and dashed purple line consider that the change in the growth of public education expenditures could be influenced by the change in growth of the school-age population and therefore demonstrate the growth for public education expenditures per young person aged between 6 and 23. Both lines also show that the growth in public education expenditures per young person fluctuated until 2009 and significantly decreased following the Eurozone crisis. Moreover, the five-year averages of the growth in public education expenditures per young person in the EU-28 countries (excluding Croatia and Slovenia) was 4.2% in 1998–2002 and declined to 0.1% in 2011–2015 following the Eurozone crisis.

Next, Figure 10 exhibits that the growth in public healthcare expenditures followed a similar trend to the growth in public education expenditures. The public healthcare expenditures growth in the EU-28 countries fluctuated between 1996 and 2009 but did not experience a permanent decline until 2009. However, the growth in public education expenditures had a long-term decline following the Eurozone crisis. In Figure 10, dashed green and purple lines demonstrate growth in per capita public healthcare expenditures. The 5-year moving average for growth in per capita public healthcare expenditures in the EU-28 (excluding Croatia and Slovenia) was in the range of 2.9–4.5% until 2009 and significantly declined in the post-2009 period.

**Table 1: Growth in public healthcare and education expenditures in the given periods following the Eurozone crisis**

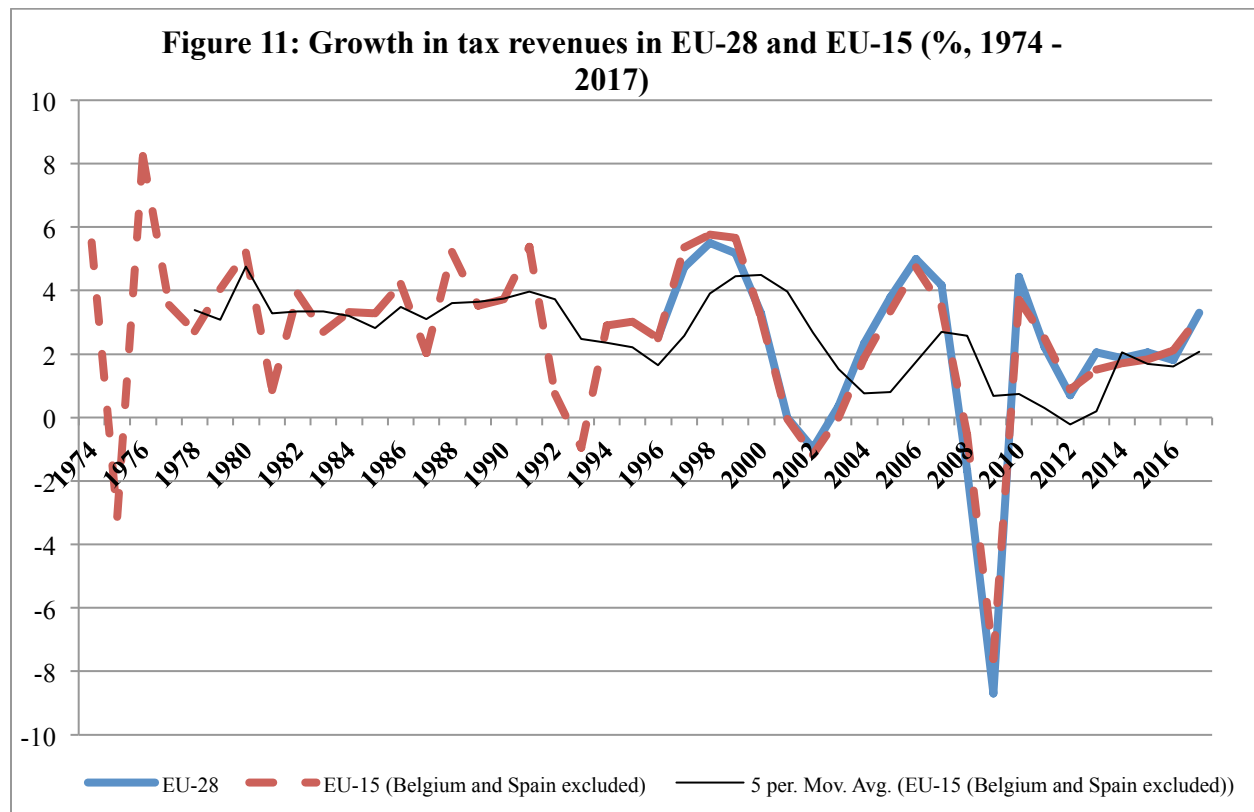
	Education		Healthcare	
	Growth (%, 2009-2013)	Growth (%, 2009-2017)	Growth (%, 2009-2013)	Growth (%, 2009-2017)
Cyprus	-6.4	-15.0	-3.9	-12.8
Greece	-15.1	-26.6	-40.8	-39.8
Italy	-12.6	-15.6	-6.2	-7.8
Portugal	-19.6	-27.5	-23.1	-23.1
Spain	-15.8	-8.6	-13.7	-7.1

Notes: Author's own calculations based on Eurostat (2019) and the World Bank's (2019) World Development Indicators. The growth in public education and public healthcare expenditures measure show the real growth and are calculated using GDP (constant 2010 US\$) multiplied by shares of education and healthcare expenditures in GDP.

The decline in the growth in public healthcare and education expenditures is more noticeable in the Southern European economies that have been experiencing the Eurozone crisis. Severe austerity measures have been implemented in the countries that have struggled with the Eurozone crisis (Table 1). In Greece, public education and public healthcare expenditures respectively declined by 26.6% and 39.8% in real terms between 2009 and 2017. Nevertheless, the austerity measures in education were the largest in Portugal (even larger than Greece). The public education spending in Portugal was reduced by 27.5% between 2009 and 2017. Similarly,

severe austerity measures were implemented in public education in Italy. The public education expenditures declined by 15.6% in Italy in real terms in 2009–2017.

The growth in tax revenues would be expected to significantly influence public education and healthcare expenditures, since tax revenues finance the public social infrastructure. The dashed red line in Figure 11 shows that the growth in tax revenues in the EU-15 (excluding Belgium and Spain) fluctuated between 1974 and 2017. The blue line in Figure 11 shows the growth in tax revenues in countries that currently form the EU-28 and follows a trend similar to the red line that shows the growth in tax revenues the EU-15.



Notes: Author’s own calculations based on the World Bank’s (2019) World Development Indicators. Both lines exhibit the real growth in tax revenues. Indicated countries are excluded from the data due to missing data. Due to missing data, the tax revenue for Greece in 1991–1994 is calculated assuming the yearly growth rate in tax revenues between 1990–1995 was constant in Greece. The moving average line shows the arithmetic mean of current data and past one-to-four-year lags.

The black line shows the five-year moving averages for the growth in tax revenues in the EU-15 (excluding Belgium and Spain) and reflects that the moving average of growth in tax revenues fluctuated around 2.8–4.7% in 1978–1992. The growth in tax revenues in the EU-15 (excluding Belgium and Spain) declined in the first half of 1990s, and it temporarily increased

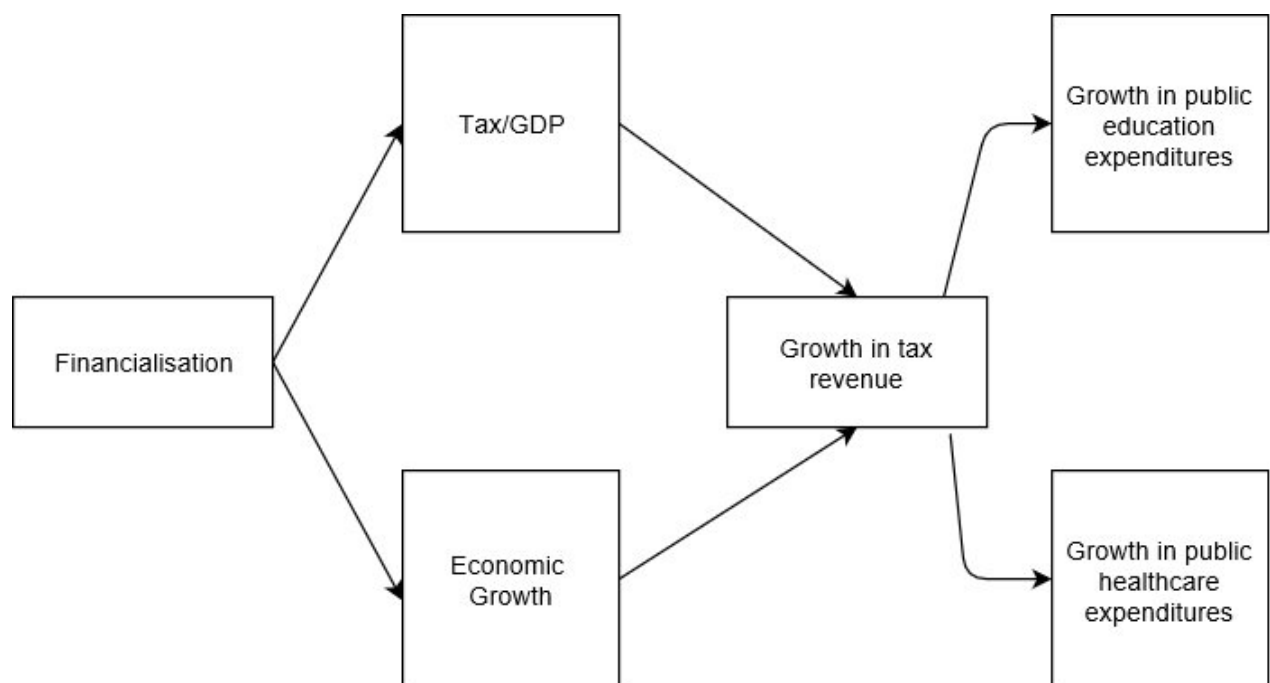
and exceeded 4% in the second half of the 1990s. Nevertheless, in 2002–2008, the five-year moving averages for the growth in tax revenues in the EU-15 (excluding Belgium and Spain) was 0.8–2.7%, a level below the 1978–1992 period. Last, following the year 2009, the five-year moving averages for growth in tax revenues in the EU-15 (excluding Belgium and Spain) significantly declined to a level below zero and returned back only to 2.1% in 2017.

The general trends in growth in public social expenditures and measures of financialisation themselves do not give a clear picture on the causal relationship between financialisation and public social infrastructure. The next two sections of this paper will discuss the possible mechanisms through which financialisation could influence public social expenditures in the European Union and predict the direction and magnitude of the causal effect of financialisation on growth in public social expenditures.

#### 4. Financialization and public social expenditures in the European Union

Financialisation negatively affects both the growth of taxes and share of taxes in GDP (%), which in turn reduces the growth of taxes collected by the government. As an outcome, financialisation also reduces the growth of public education and healthcare expenditures. The mechanism by which financialisation could influence public education and healthcare expenditures is summarised in Figure 12. The following subsections evaluate the channels in Figure 12 and provide empirical evidence on the proposed channels.

**Figure 12: The impact of financialisation on public education and public healthcare expenditures**



##### 4.1 Financialisation and growth

The possible link between financialisation and growth is widely discussed in the literature. Several works focus on financialisation's influence on investment behaviour through shareholder orientation. As noted in Crotty (1990), managers and owners have different priorities. Managers prioritise long-term growth and the safety of enterprises. However, increasingly, financial institutions rather than individuals own the majority of stocks of companies and dominate stock trading, and these institutions tend to turn over a great share of their stocks within a year. As a result, a larger proportion of owners tends to prioritise short-term capital gains. Similarly, Stockhammer (2004) argues that financialisation has changed management priorities in favour of shareholders who consider short-term returns as opposed to long-term growth of companies. This has reduced the growth and capital accumulation of companies. This is partially because the



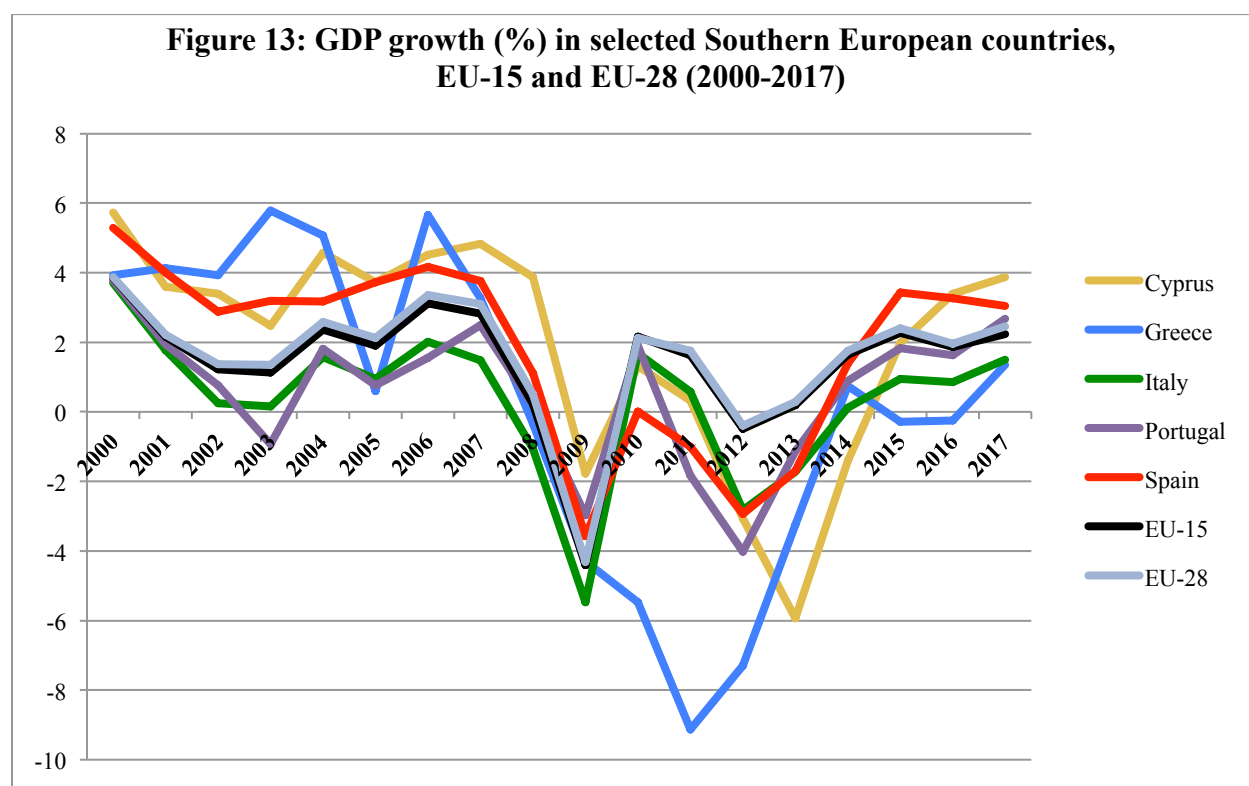
shareholder orientation associated with financialisation has led top management to shift from a “retain and reinvest” to a “downsize and distribute” strategy (Lazonick and O’Sullivan, 2000). Hence, the top management is less interested in reinvestment of profits on physical capital and complementary human resources and rather tends to distribute profits consistent with the interests of stockholders.

On the other hand, Boyer (2000) indicates that “finance-led growth” could be possible, since easy access to credit could stimulate consumption. Higher consumption enhances investment and could overcome the negative effects of shareholder orientation. However, “finance-led growth” is possible only when easing access to credit could sufficiently stimulate consumption and the propensity to consume for rentiers is sufficiently high. On the other hand, Dutt (2006) shows that higher consumer borrowing could reduce consumption in the long run by increasing consumers’ debt burden. Moreover, it might lead to the redistribution of income towards rentiers and reduce consumption, since the rentiers’ propensity to consume is lower compared to workers. Moreover, a debt-led growth regime enhanced by consumer loans could lead to structural instabilities and economic crises as shown in various economic models (Botta et. al, 2018; Kumhof, Ranciere and Winant, 2015; Setterfield and Kim, 2016; Setterfield, Kim and Rees, 2016) and observed in the US economic crisis in 2008 (Stockhammer, 2015; Kumhof, Ranciere and Winant, 2015).

The growth in consumer loans is supported by another aspect of financialisation: financial innovations and securitization (Stockhammer, 2012). Securitization might increase access to credit; however, it could reduce economic activity if it leads to excessive debt burdens and defaults (Bertay, Gong and Wagner, 2017). This is because securitization reduces banks’ incentives for screening and monitoring, which leads to low-quality loans. Indeed, using a panel of 104 countries, Bertay, Gong and Wagner (2017) empirically found that securitization of household loans led to an increase in the share of nonperforming loans in total loans and also a decline in investment growth over the period 1995–2012.

The short-termism and increasing shareholder orientation are reflected in the rising corporate debt of non-financial firms, which is another characteristic of financialisation (Palley, 2013; Davis, 2016) that might impede economic growth. The rise in corporate debts is pushed by increasing dividend payments and financial asset acquisitions (Davis, 2017) as opposed to rising physical investments. Indeed, companies used a significant proportion of their borrowing in post-1980 for repurchase of their own stocks (Palley, 2013). The stock buybacks of companies clearly reflects the shareholder orientation, since stock buybacks aim to improve the stock market valuations of companies. The financial payments due to higher indebtedness of non-financial firms and rising distribution of dividends might reduce investments through decreasing available sources for physical investments (Orhangazi, 2008). Increasing financial payments could also shorten the planning horizons of companies and increase uncertainty on companies’ ability to finance projects in the future.

Several previous studies examined the outcomes of financial incomes and financial payments in Europe on growth and capital accumulation. In an earlier work, Stockhammer (2004) found that interest and dividend income in non-financial companies as a share of their value added reduced the output growth in France in 1978–1997. In a firm-based analysis, Tori and Onaran (2019) find that both financial payments (interest and dividends) and financial incomes in non-financial corporations reduce the capital accumulation in the non-financial corporations in the 14 EU countries (EU-15 except Luxembourg). In a separate study, Tori and Onaran (2018) also find a negative impact of financial payments (interest and dividends) and financial incomes in non-financial corporations on capital accumulation in the non-financial corporations specifically in the UK. Last, using panel data composed of 27 European countries, Barradas (2017) finds that non-financial corporations’ financial investments and their interest and dividend payments reduced their real investments in 1995–2013.

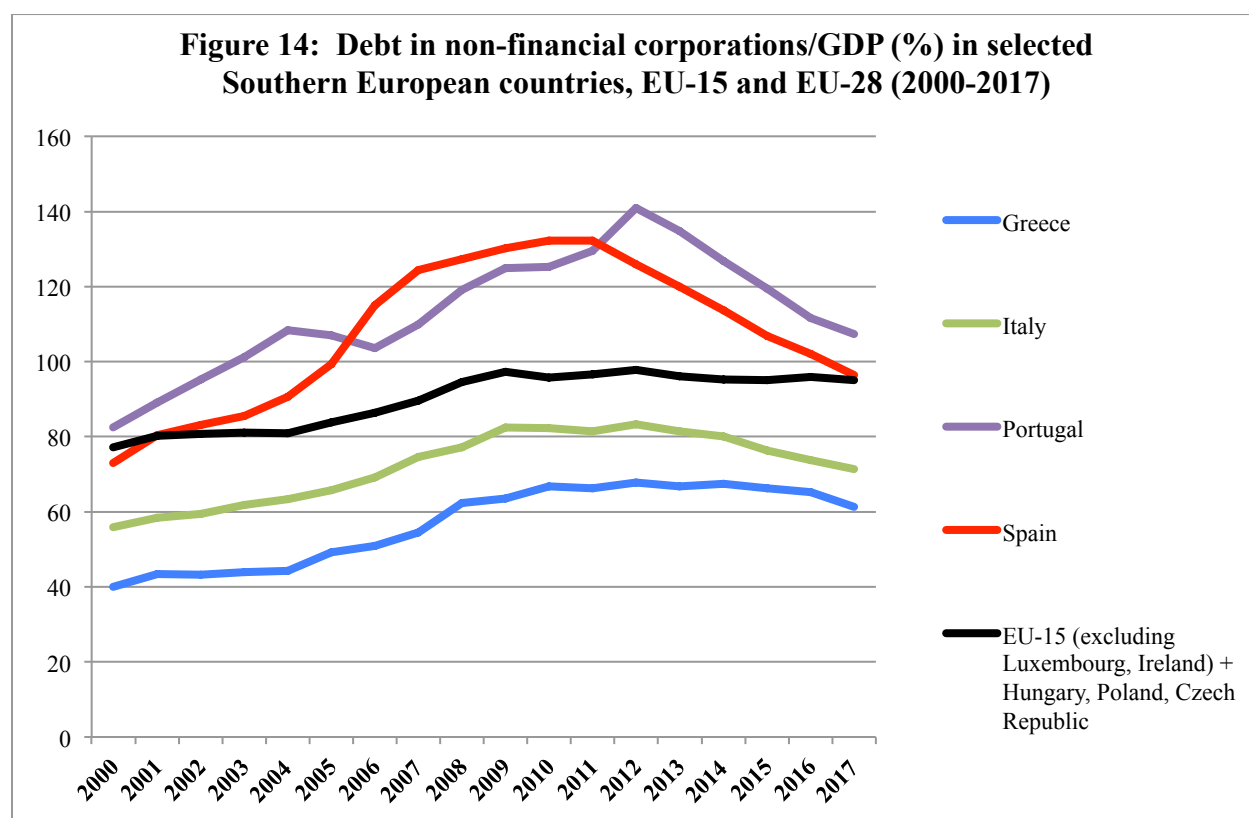


Notes: Author’s calculations based on the World Bank’s (2019) World Development Indicators. The growth values reflect growth in GDP (constant 2010 US\$).

The significant expansion and rising debt burden in the non-financial corporations and households was an impediment on the four Southern European economies (Greece, Italy, Spain, and Portugal) during the Eurozone crisis that emerged in 2008. Following the Eurozone crisis, Cyprus, Greece, Italy, Spain, and Portugal experienced significant contraction in their economies between 2009 and 2013 (Figure 13). The growth rates in Greece, Italy, and Portugal were also

below 2% for 2014–2016. Cyprus in 2014 and Greece in 2015 and 2016 still experienced negative growth rates.

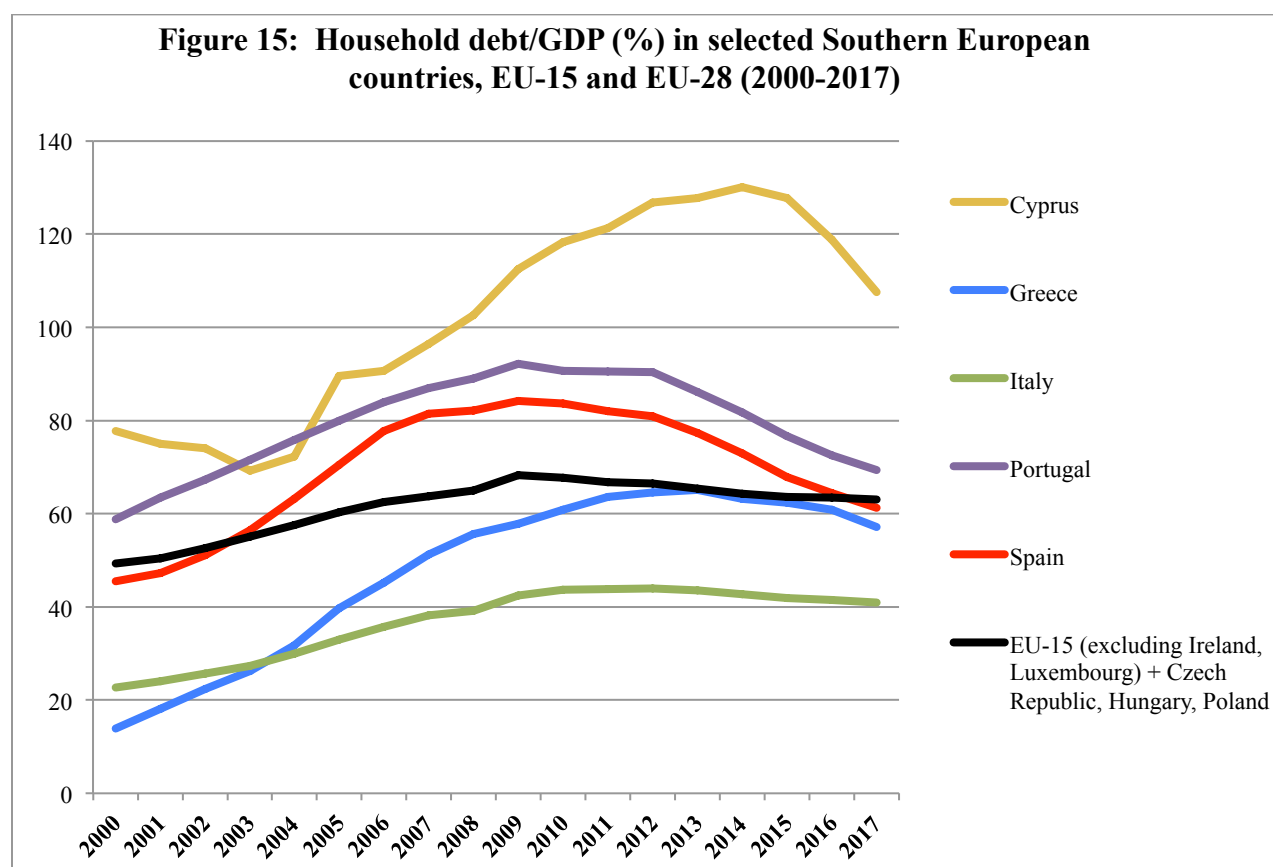
Figure 14 and Figure 15 respectively show that debt in non-financial corporations/GDP and household debt/GDP in Portugal and Spain significantly increased and surpassed the overall levels in the EU in 2000s. The indebtedness in non-financial corporations and household indebtedness were at their peak in Spain and Portugal during the Eurozone crisis. In the case of Spain, the favourable conditions for mortgages generated a housing boom and led to the expansion in the construction sector supported by credit expansion in 1997–2007 (Carballo-Cruz, 2011). Nevertheless, the housing boom started to reach its limits in Spain by 2007. In 2007, housing sales significantly declined, and the housing prices started to fall. The downturn in the housing market also raised solvency concerns in the Spanish banking sector by 2009. As a result of the intensification of problems in the banking sector, the Spanish banks reduced their credits to companies and households. The decline in credit availability also pulled the consumption and investments in Spain down, since non-financial firms and households who already faced the burden of debt payments had to reduce their expenditures.



Source: Bank for International Settlements (2019) and author's calculations based on Bank for International Settlements. Note: Debt in non-financial corporations includes debt in both private and public non-financial corporations.

Compared to Spain, the crisis in Portugal is more associated with sovereign debt; however, the growth of indebtedness in the private sector and of households also negatively contributed to the crisis. In Portugal, the legislation on securitisation in 2000 increased the use of credit securitisation in the 2000s (Barradas et. al., 2018). The credit securitisation allowed the Portuguese banks to provide credits at a lower cost, which pushed the growth of mortgage loans, consumer loans, and loans to small and medium enterprises. The growth of private loans left Portuguese banks with low capital adequacy ratios when the Eurozone crisis emerged. Moreover, due to their high indebtedness, credit agencies reduced the ratings of most Portuguese companies.

Tori and Onaran (2017) for Spain and Portugal and Barradas and Lagoa (2017) for Portugal empirically estimate that the financial payments hamper real investments in these countries. Hence, the debt burden on non-financial firms in Spain and Portugal could have reduced capital accumulation and economic growth at the peak of Eurozone crisis, which in turn would have been an impediment to the growth of tax revenues and public social expenditures. Similarly, high household indebtedness could have limited the growth of tax revenues and public social expenditures by being an impediment to household consumption.



Source: Bank for International Settlements (2019), Eurostat (2019), and author's calculations based on Bank for International Settlements.

Although the crisis in Greece is mainly associated with the government debt crisis, Figure 14 and Figure 15 respectively show that debt in non-financial corporations as a share of GDP (%) and household debt as a share of GDP (%) increased faster than the average of EU-15 + Poland, Hungary, and the Czech Republic in the 2000s. The rising indebtedness is more noticeable for household debt. The household debt in Greece started increase in 1994, when the ceiling on consumer loans was raised (Brissimis, Garganas and Hall, 2014). The growth of consumer loans accelerated in Greece when consumer credits were completely liberalised and the ceiling for consumer loans was abolished completely in mid-2003. As a result, household debt as a share of GDP (%) increased from 26.3% in 2003 to 57.8% in 2009 and increased further during the years of the Greek crisis. The interest payment burden on private non-financial firms and households might have contributed to the contraction of the Greek economy along with the public debt crisis.

The Cyprus economy also experienced a slowdown starting in 2009, and GDP in Cyprus contracted by 5.9% in 2013 as an outcome of rapid growth in debt and a banking crisis (Demetriades, 2017). The growing debt in Cyprus was due to growth in household debt and private corporation debt along with the sovereign debt. Household debt/GDP in Cyprus increased from 69.2% in 2003 to 127.7% in 2013. The growth in household indebtedness in Cyprus was larger than in Greece, Italy, Spain, and Portugal between 2003 and 2013. The growth in housing debt was an important driver of the household credit boom, since housing loans increased by 31.2% in 2006, 29.7% in 2007, and 22.6% in 2008 (Cleridesa and Stephanou, 2009). Moreover, the debt in private corporations as a share of GDP also increased from 175.3% in 2004 to 211.9% in 2013<sup>3</sup> (Eurostat, 2019). As an outcome of rapidly growing debt, the stress tests in 2011 conducted by European Banking Authority showed that Cyprus's two largest banks, Laiki and Bank of Cyprus, experienced significant capital shortfalls (Demetriades, 2017). As Laiki experienced a danger of running out of cash in 2013, Laiki and Bank of Cyprus merged and were restructured through a bailout program (financed by IMF and ECB), which prevented further destruction via the on-going economic crisis.

The growth in debt in households and non-financial corporations before the Eurozone crisis were lower in Italy compared to other Southern European countries. However, household debt-to-GDP ratio in Italy increased from 22.7% in 2000 to 42.5% in 2009 and debt in non-financial corporations as a share of GDP rose from 55.9% in 2000 to 82.5% in 2009. The growth in the debts of households and non-financial corporations might have respectively reduced the consumption of households and investments of non-financial corporations in Italy and contributed to the economic contraction in the post-2008 period.

The economic contraction of Southern European economies is also crucial for public social expenditures. As discussed in Table 1, the Eurozone crisis also led to severe austerity measures in Southern European economies targeting public education and healthcare spending

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<sup>3</sup> The indebtedness in private corporations in Cyprus is not shown in Figure 14, since the data is not compatible and only show the indebtedness in private corporations.

between 2009 and 2013. Moreover, the contractions in public social expenditures continued in the post-2013 period in Greece, Portugal, and Italy.

## **5.2 Financialisation and tax rates**

As an outcome of financialisation, the financial sector with the support of other businesses could promote a policy framework supporting the interests of the financial sector (Palley, 2013). The policy agenda of the financial sector includes financial deregulation and tax cuts along with labour market flexibility and abandonment of full-employment goals. The financialisation of Europe also promoted several policies including deregulation of financial markets and the lowering of top and corporate tax rates (Bieling, 2013).

The financial sector is more influential on policymakers than other regulated sectors of the economy because of the intensity of its ties with the other sectors in the economy (Young and Pagliari, 2017). Due to the financial sector's centrality in the economy, the broader business community outside financial sector is more likely to mobilise and express preferences that highly match with the preferences of the financial sector in an incidence of changing financial regulations<sup>4</sup>.

The growth in size strengthens the lobbying capabilities of the financial sector. Banks with greater financial sources can fund campaigns, obtain media coverage, and also gain greater capacity and technical knowledge to provide policy-relevant information and arguments (Chalmers, 2017; Baker, 2010). A financial institution that could provide policy suggestions with greater expertise and information is more like to be influential. Indeed, in an empirical study for 33,000 banks from 179 countries, Chalmers (2017) shows that banks with greater assets are significantly more involved in lobbying activities. The increasing lobbying activities of banks also include lobbying against rising taxes on financial activities.

An example of the influence of lobbying in the financial sector in Europe is the discussion on the Financial Transactions Tax. In 2011, the European Commission proposed an additional new tax on financial transactions (exchange of shares, bonds, and derivative contracts) that would generate an extra €57 billion tax revenue. Nevertheless, the large banks operating in Europe (e.g., Goldman Sachs, Deutsche Bank, Citigroup, and Morgan Stanley) and their lobbying associations (the International Banking Federation and the European Fund and Asset Management Association) started to lobby against the proposed Financial Transactions Tax by publishing various reports on the 'negative effects of Financial Transactions Tax' (Kastner, 2018; Gabor, 2016). As a result of the noisy lobbying of the financial sector, the discussions on the Financial Transactions Tax were noticeably 'quietened' and the European Commission has not yet implemented the proposed tax.

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<sup>4</sup> In their study, Young and Pagliari (2017) also empirically find that higher business unity is observed in the incidence of financial regulations in the US and the EU compared to the cases of regulations in agriculture, energy, pharmaceuticals, and telecommunications.

The growth of financial activities of non-financial companies could also impose pressure on tax rates. Hein (2012) claims that increased shareholder value orientation and short-termism reduce the bargaining power and activities of labour unions and change the distribution in favour of capital owners. Consistent with this Kohler, Guschanski and Stockhammer (2019) argue that financial globalisation generates exit options for capital, which worsens the bargaining power of labour and reduces wage shares. A similar argument could be made for tax rates and financialisation, because financialisation generates new options for capital movements to different markets in case of significant increases of taxes on corporations and top incomes.

**Table 2: Number of EU-28 economies with greater volatilities of foreign portfolio investment and foreign direct investment for the given periods.**

	1990-2018	1990-1999	2000-2009	2010-2018
Number of countries with greater volatility of foreign portfolio investment (assets)	16	9	19	16
Number of countries with greater volatility of foreign direct investment (assets)	12	4	9	12
Number of countries with greater volatility of foreign portfolio investment (liabilities)	19	11	18	19
Number of countries with greater volatility of foreign direct investment (liabilities)	9	2	10	9

Notes: The volatility is measured by standard deviation of portfolio investment and direct investment reported in Eurostat's (2019) balance of payments. The number of EU countries reported for 1990–1999 is 13 due to data limitations.

The rise of financial portfolio investments generates greater flexibility and exit options than direct investments, as the movement of financial portfolio investments is less costly. The more flexible characteristic of financial portfolio investments can be observed in Table 2, which hints that foreign portfolio investments are more volatile than foreign direct investments in the majority of the EU economies. Table 2 demonstrates the number of EU economies in which foreign portfolio investments (FPI) have greater standard deviation compared to the standard deviation of foreign direct investments (FDI) and the number of EU economies in which foreign direct investments have greater standard deviation compared to the standard deviation of foreign portfolio investments. The standard deviations for FDI and FPI are calculated in terms of assets (domestic residents' investments abroad) and liabilities (foreigners' investments in home country) for 1990–2018 and its sub-periods (1990–1999, 2000–2009, and 2010–2018). For both assets and liabilities, the five largest EU economies (France, Germany, Italy, Spain, and the United Kingdom) have larger volatility of FPI in their balance of payments for 1990–2018, and the countries with larger volatility of FDI are mainly small economies<sup>5</sup>. The majority of the EU-28 economies also have greater volatility of FPI for each sub-period examined.

<sup>5</sup> For assets in 1990–2018, France, the United Kingdom, Italy, Germany, Greece, Spain, Portugal, Denmark, Slovakia, Slovenia, Latvia, Lithuania, Sweden, Bulgaria, and Estonia have greater volatility of foreign portfolio

Various papers empirically examine the negative impact of financialisation on inequality by underlining the rising bargaining power of the financial sector (e.g., Kohler, Guschanski and Stockhammer, 2019; Stockhammer, 2017). Moreover, Tomaskovic-Devey, Lin, and Meyers (2015) find that financialisation in non-financial firms reduced the tax revenues in the US. However, to my knowledge, the impact of financialisation on tax revenues in the EU was not empirically predicted prior to this paper. The studies that empirically test the effect of financialisation on public social expenditures are very limited. Onaran and Boesch (2014) develop an index of globalisation, which includes portfolio investments, and an index of restrictions on trade and capital flows, along with trade, FDI, and income payments to foreign nationals. Using this measure, Onaran and Boesch show that globalisation respectively increased public expenditures in Western Europe and reduced public expenditures in Baltic countries. Globalisation also has mixed effects on the implicit tax rates in European countries with different types of political structures. However, Onaran and Boesch do not investigate the separate effect of the measures of financialisation on tax collection and public spending.

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investment, and Croatia, Romania, Finland, the Czech Republic, Poland, Malta, Cyprus, Austria, Belgium, Hungary, the Netherlands, and Luxembourg have greater volatility of foreign direct investment. For liabilities in 1990–2018, France, Italy, the United Kingdom, Spain, Germany, Ireland, Greece, Portugal, Denmark, Sweden, Finland, Slovenia, the Czech Republic, Poland, Lithuania, Slovakia, Latvia, Croatia, and Romania have greater volatility of foreign portfolio investment, and Estonia, Bulgaria, Cyprus, Austria, Malta, Belgium, Hungary, Luxembourg, and the Netherlands have greater volatility of foreign direct investment.



## 5. Empirical Analysis

This section examines the possible causal relationship between financialisation and public education and healthcare expenditures growth in the countries that are currently part of the EU-28. Financialisation affects public social expenditures through its influence on tax revenues. Therefore, first, the impact of financialisation on the growth of tax revenues is tested using five different measures of financialisation. Second, the casual mechanism behind the influence of financialisation on public tax revenues is examined through testing the impact of financialisation on tax/GDP (%) and growth in GDP. Third, the econometric analysis investigates the impact of growth in tax revenues on growth in public education and public healthcare expenditures. Last, the section presents the economical significance of the coefficients estimated<sup>6</sup>.

### 5.1 Data and variables

The empirical analysis in this section tests the impact of financialisation through the five indicators discussed in Section 2. The five variables preferred are:

- i)* The value-added share of financial, insurance, and real estate sector in GDP (FIRE VA/GDP, %)
- ii)* Domestic credit to the private sector as a share of GDP (Credit/GDP, %)
- iii)* Non-financial corporations' debt as a share of GDP (Nonfin debt/GDP, %)
- iv)* Household debt as a share of GDP (House debt/GDP, %)
- v)* Property income received by non-financial firms as a share of value added in non-financial firms (Nonfin property/VA, %).

These measures are tested in separate regressions, since a change in one measure of financialisation is linked with the other five measures.

The analysis uses the growth in tax revenues as a dependent variable. The growth in tax revenues captures the impact of financialisation both through GDP growth and changes in the tax revenues/GDP (%). However, for examining the channels that affect growth in taxes, the analysis also estimates financialisation's effect on tax revenues/GDP (%) and growth in GDP in separate regressions. The influence on education and healthcare is captured through the yearly growth in public education and public healthcare spending in the EU-28 countries.

The estimations on the growth of tax revenues control for GDP per capita following Baumol's (1986) idea of convergence clubs, which claims that the GDPs per capita with similar institutional structures would converge and hence the countries in the same 'club' would have

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<sup>6</sup> Alternative estimations in Appendix 1 examines the direct impact of financialisation on public healthcare expenditures and public social expenditures using the moving average of one to four year lags of the measures of financialisation.

relatively lower growth rates. Following the Lewisian framework (Lewis, 1954), the less urbanised economies might have ‘unlimited supplies of labour’ that would enter the non-subsistence economy and stimulate economic growth further. Therefore, the level of urbanization’s effect on the growth of tax revenues is also controlled. Since the impact of trade openness on growth (e.g., Dollar and Kraay, 2004; Yanikkaya, 2003) and on tax rates (e.g., Rodrik, 1997; Bretschger and Hettich, 2002) is widely discussed, the ratio of trade flows as a share of GDP ( $[\text{Exports}+\text{Imports}]/\text{GDP}$ ) is controlled in regressions for growth in tax revenues and GDP growth. The possible negative impact of inflation rate on GDP growth and growth in tax revenues is controlled through “ $\log(\text{inflation rate} + \text{minimum value of inflation rate} + 1)$ ”. This logarithmic conversion aims to converge the distribution of inflation rates to a normal distribution. However, inflation rate data has few negative values, which would drop out of the sample with simple logarithmic conversion; the conversion above prevents the loss of that data. The empirical analyses consider that the public social expenditures could grow with population. The regressions for growth in public education expenditures control for growth in the young population aged between 6 and 23, and the regressions for growth in healthcare control for the growth in total population. Last, the regressions for tax revenue as a share of GDP and growth in tax, education, and healthcare expenditures include a “left-wing government” dummy variable, as governments with social democrat, socialist, or radical-left tendencies would be expected to collect greater taxes and improve public social expenditures<sup>7</sup>.

Tax revenue as a share of GDP data is from the World Bank’s (2018) World Development Indicators (2019). Growth in tax revenues, public education expenditures, and public healthcare expenditures data reflect the real growth and are calculated using real GDP (constant 2010 US\$) data in the World Bank’s (2019) World Development Indicators multiplied by the shares of tax revenues, public education expenditures, and public healthcare expenditures in GDP from Eurostat (2019). The value-added share of the financial, insurance, and real estate sector in GDP is calculated using EU Klems (2018) and EU Klems (2009) datasets. Domestic credit to the private sector as a share of GDP, total value of stocks traded as a share of GDP, trade as a share of GDP, population growth, level of urbanization, rate of inflation, and GDP per capita data are from the World Bank’s (2019) World Development Indicators. Property income received by non-financial firms as a share of value added in non-financial firms is calculated from the Eurostat (2019) database. Non-financial corporations’ debt/GDP (%) and household debt/GDP (%) are from the Bank for International Settlements (2018). Last, the population growth data for ages 6–10, 11–17, and 18–23 are calculated using UN-DESA’s (2018) World Population Prospects 2017.

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<sup>7</sup> The parties that are associated with Progressive Alliance of Socialists and Democrats, Greens-European Free Alliance, and European United Left-Nordic Green Left groups in the European Parliament and their preceding parties are considered as ‘left-wing’. A country is considered to be governed by a left-wing government if the ‘de facto leader’ of the country was from a left-wing party for more than the half of the observed year. The de facto leader for Cyprus, France, and Finland is considered to be the President, for Austria and Germany to be the Chancellor, and for other countries to be the Prime Minister.

## 5.2 Empirical estimations

First, the impact of indicators of financialisation on growth in tax revenues in the EU-28 is tested for 1991–2017. Due to possible endogeneity and reverse causality issues, the analysis uses one-year lags of independent variables. Moreover, IV-2SLS with country-fixed effects is preferred. One-year lags of financialisation variables are instrumented with their two-year lags<sup>8</sup>.

**Table 3: Impact of financialisation on growth in tax revenues (%) in the EU-28, IV-2SLS fixed effects regressions (1991-2017)**

	(1)	(2)	(3)	(4)	(5)
(FIRE VA/GDP) <sub>t-1</sub>	-0.613** (0.294)				
(Credit/GDP) <sub>t-1</sub>		-0.082*** (0.020)			
(Nonfin debt/GDP) <sub>t-1</sub>			-0.035** (0.017)		
(House debt/GDP) <sub>t-1</sub>				-0.111*** (0.027)	
(Nonfin property/VA) <sub>t-1</sub>					-0.153** (0.074)
(Log(GDP per capita)) <sub>t-1</sub>	-13.020*** (3.210)	-16.110*** (5.012)	-9.968* (5.251)	-4.274 (5.466)	-15.981*** (3.861)
Urbanisation <sub>t-1</sub>	0.014 (0.118)	0.039 (0.220)	-0.020 (0.149)	0.247* (0.148)	-0.128 (0.138)
(Trade/GDP) <sub>t-1</sub>	0.039*** (0.015)	0.033 (0.031)	0.037 (0.025)	0.000 (0.019)	0.080*** (0.030)
(Log(Inflation + x)) <sub>t-1</sub>	-5.530*** (1.264)	-5.768*** (1.538)	-6.549*** (1.682)	-7.151*** (1.537)	-3.674** (1.567)
Left government <sub>t</sub>	1.234* (0.651)	0.600 (0.760)	1.041 (0.650)	0.963 (0.645)	1.121 (0.715)
Kleibergen-Paap rk Wald F statistic	975.494	707.434	154.308	2248.220	24.767
Observations	659	404	418	418	562
R-squared	0.087	0.141	0.099	0.107	0.088
Number of Countries	28	28	18	18	27

Notes: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Country-clustered standard errors in parentheses. Two-year lags for the indicators of financialisation are used as an instrument for one-year lag of indicators of financialisation. Stock-Yogo weak ID critical test values are 16.38 for a 0.1 maximal IV size, 8.96 for a 0.15 maximal IV size, 6.66 for a 0.2 maximal IV size, and 5.53 for 0.25 maximal IV size.

<sup>8</sup> Kleibergen-Paap rk Wald F statistics show that two-year lags of financialisation variables are strong instruments for one-year lags of financialisation variables.

Table 3 shows that domestic credits to the private sector (Credit/GDP) and household debt (House debt/GDP) have a significant negative impact at 1% level on tax revenue growth in the EU-28 countries. The value added in FIRE (FIRE VA/GDP), non-financial corporations' debt (Nonfin debt/GDP), and property incomes of non-financial firms (Nonfin property/VA) also has a negative impact on growth in tax revenues, which is significant at 5% level. The results also highlight the possibility of income convergence within the EU, since the sign for log(GDP per capita) is significantly negative at 10% in four of five estimations. Moreover, the estimations show the significant negative effect of the inflation rate. The impact of a left-wing government is positive on growth of tax revenues in all estimations; however, the left-wing government's coefficient is only significant at 10% in one of the estimations.

**Table 4: Impact of financialisation on tax revenue as a share of GDP (%) in the EU-28, IV-2SLS fixed effects regressions (1991-2017)**

	(1)	(2)	(3)	(4)	(5)
(FIRE VA/GDP) <sub>t-1</sub>	-0.268** (0.123)				
(Credit/GDP) <sub>t-1</sub>		-0.045*** (0.013)			
(Nonfin debt/GDP) <sub>t-1</sub>			-0.011** (0.005)		
(House debt/GDP) <sub>t-1</sub>				0.000 (0.010)	
(Nonfin property/VA) <sub>t-1</sub>					-0.045 (0.029)
(Log(GDP per capita)) <sub>t-1</sub>	-0.520 (1.182)	0.265 (1.841)	-2.519** (1.189)	-2.463* (1.429)	-2.172** (1.020)
Urbanisation <sub>t-1</sub>	0.197*** (0.056)	0.507*** (0.112)	0.142*** (0.050)	0.106** (0.050)	0.314*** (0.053)
(Trade/GDP) <sub>t-1</sub>	-0.028** (0.013)	-0.028 (0.020)	0.005 (0.007)	-0.003 (0.006)	0.006 (0.012)
(Log(Inflation + x)) <sub>t-1</sub>	-0.588 (0.357)	0.116 (0.395)	-0.969** (0.478)	-0.992** (0.494)	-0.143 (0.292)
Left government <sub>t</sub>	-0.065 (0.314)	0.511 (0.315)	0.333 (0.219)	0.303 (0.217)	0.795*** (0.263)
Kleibergen-Paap rk Wald F statistic	987.279	707.434	157.369	2259.037	24.767
Observations	662	404	420	420	562
R-squared	0.053	0.083	0.069	0.056	0.054
Number of Countries	28	28	18	18	27

Notes: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1, Country clustered standard errors in parentheses. Two-year lags for the indicators of financialisation are used as an instrument for one-year lag of indicators of financialisation. Stock-Yogo weak ID critical test values are 16.38 for a 0.1 maximal IV size, 8.96 for a 0.15 maximal IV size, 6.66 for a 0.2 maximal IV size, and 5.53 for 0.25 maximal IV size.

Next, the analysis examines the possible channels through which financialisation would affect growth in tax revenues. Table 4 and Table 5 respectively show the influence of financialisation on GDP growth and tax revenues/GDP (%) in the EU-28 countries. Due to the possible endogeneity issues, one-year lags of independent variables are used, and one-year lags of measures of financialisation were instrumented by their two-year lags. Table 4 shows that FIRE VA/GDP, Credit/GDP, and Nonfin debt/GDP have negative impact on tax revenues as a share of GDP, which are significant at 5% level. The evidence on the negative influence of Nonfin property/VA and House debt/GDP are insignificant at 10%.

**Table 5: Impact of financialisation on growth in GDP (%) in the EU-28, IV-2SLS fixed effects regressions (1991-2017)**

	(1)	(2)	(3)	(4)	(5)
(FIRE VA/GDP) <sub>t-1</sub>	-0.556*** (0.091)				
(Credit/GDP) <sub>t-1</sub>		-0.077*** (0.009)			
(Nonfin debt/GDP) <sub>t-1</sub>			-0.019** (0.007)		
(House debt/GDP) <sub>t-1</sub>				-0.103*** (0.011)	
(Nonfin property/VA) <sub>t-1</sub>					-0.076** (0.034)
(Log(GDP per capita)) <sub>t-1</sub>	-7.844*** (1.376)	-6.997*** (1.861)	-5.374*** (1.626)	-0.120 (1.620)	-10.192*** (1.705)
Urbanisation <sub>t-1</sub>	-0.048 (0.044)	-0.051 (0.092)	-0.150*** (0.053)	0.145*** (0.054)	-0.236*** (0.065)
(Trade/GDP) <sub>t-1</sub>	0.027*** (0.008)	0.010 (0.011)	0.020 (0.012)	-0.006 (0.011)	0.040*** (0.014)
(Log(Inflation + x)) <sub>t-1</sub>	-3.879*** (0.631)	-4.249*** (0.688)	-3.555*** (0.968)	-4.112*** (0.792)	-2.863*** (0.770)
Kleibergen-Paap rk Wald F statistic	1035.527	728.116	173.315	2304.819	25.027
Observations	674	404	428	428	562
R-squared	0.213	0.324	0.173	0.288	0.194
Number of Countries	28	28	18	18	27

Notes: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Country-clustered standard errors in parentheses. Two-year lags for the indicators of financialisation are used as an instrument for one-year lag of indicators of financialisation. Stock-Yogo weak ID critical test values are 16.38 for a 0.1 maximal IV size, 8.96 for a 0.15 maximal IV size, 6.66 for a 0.2 maximal IV size, and 5.53 for 0.25 maximal IV size.

Table 5 reflects the impact of financialisation on growth in GDP. According to all measures of financialisation (FIRE VA/GDP, Credit/GDP, Nonfin debt/GDP, House debt/GDP,

Nonfin property/GDP), financialisation significantly reduces economic growth at 5%. This is consistent with the literature discussed in Section 4.1.

**Table 6: Impact of growth in tax revenues (%) on growth of public healthcare and education expenditures (%) in the EU-28, fixed effects regressions (1991-2017)**

	<i>Growth Public Health Exp. (%)</i>		<i>Growth Public Education Exp. (%)</i>	
	Country FE (1)	AR(1) – Country FE (2)	Country FE (3)	AR(1) – Country FE (4)
(Growth Tax) <sub>t-1</sub>	0.167*** (0.049)	0.183*** (0.047)	0.114** (0.042)	0.110*** (0.037)
(Growth Tax) <sub>t-2</sub>	-0.017 (0.083)	-0.005 (0.040)	0.039 (0.028)	0.055* (0.032)
(Growth Tax) <sub>t-3</sub>	0.071* (0.037)	0.071* (0.039)	0.063 (0.048)	0.075** (0.031)
(Growth Tax) <sub>t-4</sub>	0.069** (0.027)	0.037 (0.038)	0.064*** (0.014)	0.043 (0.031)
(Log(GDP per capita)) <sub>t-1</sub>	-6.015** (2.223)	-9.807*** (2.412)	-0.437 (2.864)	-2.476 (2.832)
Urbanisation <sub>t-1</sub>	-0.409** (0.183)	-0.424** (0.201)	-0.421** (0.170)	-0.370* (0.190)
(Trade/GDP) <sub>t-1</sub>			0.017 (0.021)	0.017 (0.019)
(Pop Growth) <sub>t-1</sub>	0.980 (0.732)	1.313 (0.868)		
(Pop Growth Age 6-10) <sub>t-1</sub>			-0.550*** (0.147)	-0.501*** (0.187)
(Pop Growth Age 11-17) <sub>t-1</sub>			0.181 (0.169)	0.276 (0.201)
(Pop Growth Age 18-23) <sub>t-1</sub>			0.026 (0.177)	0.026 (0.219)
Left government <sub>t</sub>	-0.617 (0.751)	-0.532 (0.762)	0.870* (0.503)	0.830 (0.633)
Constant	94.275*** (28.682)	134.515*** (23.169)	34.082 (28.615)	41.282* (24.994)
Observations	577	549	578	550
R-squared	0.079	0.094	0.105	0.089
Number of Countries	28	28	28	28

Notes: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Country-clustered standard errors in parentheses in regressions (1) and (3).

Next, Table 6 estimates the impact of growth in tax revenues on public healthcare expenditures and public education expenditures in two separate regressions. (1) and (3)

respectively estimate public healthcare expenditures and public education expenditures using country-fixed effects. (2) and (4) are AR(1) regressions with country-fixed effects which aim to reduce possible autocorrelation problems.

**Table 7: Impact of growth in tax revenues (%) on growth of public education expenditures (%) in primary, secondary and tertiary education in the EU-28, fixed effects regressions (1991-2017)**

	<i>Growth Public Primary Exp. (%)</i>		<i>Growth Public Secondary Exp. (%)</i>		<i>Growth Public Tertiary Exp. (%)</i>	
	Country FE (1)	AR(1) – Country FE (2)	Country FE (3)	AR(1) – Country FE (4)	Country FE (5)	AR(1) – Country FE (6)
(Growth Tax) <sub>t-1</sub>	0.251** (0.092)	0.248*** (0.085)	0.178*** (0.059)	0.161** (0.072)	0.029 (0.065)	-0.044 (0.088)
(Growth Tax) <sub>t-2</sub>	0.057 (0.068)	0.066 (0.082)	0.067 (0.051)	0.064 (0.069)	0.034 (0.086)	0.095 (0.084)
(Growth Tax) <sub>t-3</sub>	0.035 (0.093)	0.030 (0.079)	0.150** (0.069)	0.129* (0.067)	0.026 (0.078)	0.026 (0.082)
(Growth Tax) <sub>t-4</sub>	0.039 (0.067)	0.012 (0.079)	0.095* (0.051)	0.029 (0.067)	0.192*** (0.068)	0.149* (0.082)
(Log(GDP per capita)) <sub>t-1</sub>	-0.597 (5.775)	-1.061 (7.264)	-2.284 (4.959)	-1.311 (6.104)	-18.728** (7.133)	-25.507*** (7.576)
Urbanisation <sub>t-1</sub>	-0.357 (0.329)	-0.276 (0.402)	-0.060 (0.216)	-0.079 (0.378)	-0.532 (0.328)	-0.572 (0.442)
(Trade/GDP) <sub>t-1</sub>	-0.004 (0.032)	-0.012 (0.041)	0.006 (0.021)	-0.007 (0.039)	0.101*** (0.031)	0.104** (0.045)
(Pop Growth Age 6-10) <sub>t-1</sub>	-0.407** (0.167)	-0.395 (0.392)				
(Pop Growth Age 11-17) <sub>t-1</sub>			0.627** (0.264)	0.361 (0.395)		
(Pop Growth Age 18-23) <sub>t-1</sub>					0.768** (0.342)	0.693 (0.476)
Left government <sub>t</sub>	-1.947 (1.814)	-2.019 (1.405)	1.552* (0.830)	1.916 (1.290)	1.273 (0.971)	1.644 (1.516)
Constant	34.775 (49.485)	29.445 (65.991)	28.431 (46.884)	14.074 (50.606)	222.809*** (67.586)	225.579*** (65.164)
Observations	523	495	523	495	523	495
R-squared	0.038	0.032	0.053	0.028	0.066	0.058
Number of Countries	28	28	28	28	28	28

Notes: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Country-clustered standard errors in parentheses in regressions (1), (3), and (5).

Governments that experience a decrease in the growth of tax revenues might not immediately reflect this decline to their education and healthcare spending. However, the slowdown in the growth of tax revenues might increase the public indebtedness in the medium and long run, which would push governments to reduce the growth of their healthcare and

education expenditures. To control the lagged effects of tax revenues on public budgets, the analysis controls the impact of one-to-four-year lags of tax revenue growth. Moreover, due to possible endogeneity issues, the one-year lags of the other independent variables are used.

For all four regressions, the impact of all four lags of tax growth is positive, and tax growth's one-year lags are significant at 5% level. For growth in public healthcare expenditures, the three-year growth of tax revenues is positive and significant at 10% level. In regression (1), the four-year lag of growth in tax revenues have, at 5% level, significant impact effects on growth in public healthcare expenditures. In regression (3), the four-year lag of growth in tax revenues and in regression (4) the three-year lag of growth in tax revenues have significant positive effects on growth in public education expenditures at 5% level.

Next, Table 7 estimates the impact of one-to-four-year lags of growth in tax revenues on growth in public primary, secondary, and tertiary education expenditures in separate estimations using regressions with country-fixed effects and AR(1) country-fixed effects estimations. The estimations highlight that all lags of growth in tax revenues have a positive impact on growth in public primary and secondary education expenditures, and the coefficients for one-year lags are significant at 5%. The three-year lags of tax growth, at 5% and 10% levels, have a significant effect on growth in public secondary education expenditures in (3) and (4), respectively. The four-year lags of growth in tax revenues, at 1% and 10% levels, have a significant effect on growth in public tertiary education expenditures in (5) and (6), respectively.

Alternative estimations in Appendix 2 also show that decline in various lags of growth in taxes increases the probability of implementing of austerity measures, reduction in public healthcare and public education expenditures at all levels (primary, secondary, tertiary). The estimations also reflect that the left wing governments in the EU-28 are less likely to implement austerity measures in education.

Last, Table 8 exhibits the economic significance of the empirical estimations in this section. Using the coefficients in Tables 3, 6, and 7, Table 8 shows the impact of 1% point and one standard deviation change of different financialisation measures on the growth in total public education, public health healthcare, public primary education, and public secondary expenditures in the EU-28 countries over the four-year time. For this, the estimated coefficients of the financialisation measures in Table 3 ( $\beta_{finance,t-1}$ ) and estimated coefficients of the tax growth in Table 6 and Table 7 ( $\beta_{taxgrowth,t-1}, \beta_{taxgrowth,t-2}, \beta_{taxgrowth,t-3}, \beta_{taxgrowth,t-4}$ ) are used in the following equation:

*Impact of 1% point change*

$$= \beta_{finance,t-1} * ((1 + \beta_{taxgrowth,t-1})(1 + \beta_{taxgrowth,t-2})(1 + \beta_{taxgrowth,t-3})(1 + \beta_{taxgrowth,t-4}) - 1)$$



**Table 8: Impact of 1 percentage point change in measures of financialisation on growth in public social expenditures in EU-28 countries over four years (1991 - 2017)**

Variable	Growth in public education expenditures (%)		Growth in public healthcare expenditures (%)	
	<i>Impact of 1% point change</i>	<i>Impact of one standard deviation change</i>	<i>Impact of 1% point change</i>	<i>Impact of one standard deviation change</i>
FIRE VA/GDP (%)	-0.188, -0.192	-0.90, -0.91	-0.188, -0.192	-0.89, -0.91
Private credit/GDP (%)	-0.025, -0.026	-1.17, -1.19	-0.025, -0.026	-1.17, -1.19
Nonfin debt/GDP (%)	-0.011	-0.57, -0.58	-0.011	-0.57, -0.58
Household debt/GDP (%)	-0.034, -0.035	-0.98, -1.00	-0.034, -0.035	-0.98, -1.00
Nonfin property/VA (%)	-0.047, -0.048	-0.56, -0.57	-0.047, -0.048	-0.56, -0.57
Variable	Growth in public primary education expenditures (%)		Growth in public secondary education expenditures (%)	
	<i>Impact of 1% point change</i>	<i>Impact of one standard deviation change</i>	<i>Impact of 1% point change</i>	<i>Impact of one standard deviation change</i>
FIRE VA/GDP (%)	-0.237, -0.259	-1.13, -1.23	-0.267, -0.357	-1.27, -1.70
Private credit/GDP (%)	-0.032, -0.035	-1.47, -1.60	-0.036, -0.048	-1.65, -2.21
Nonfin debt/GDP (%)	-0.014, -0.015	-0.71, -0.78	-0.015, -0.020	-0.80, -1.08
Household debt/GDP (%)	-0.043, -0.047	-1.23, -1.34	-0.048, -0.065	-1.38, -1.85
Nonfin property/VA (%)	-0.059, -0.065	-0.70, -0.77	-0.067, -0.089	-0.79, -1.06
Variable	Growth in public tertiary education expenditures (%)			
	<i>Impact of 1% point change</i>	<i>Impact of one standard deviation change</i>		
FIRE VA/GDP (%)	-0.143, -0.185	-0.68, -0.88		
Private credit/GDP (%)	-0.019, -0.025	-0.89, -1.14		
Nonfin debt/GDP (%)	-0.008, -0.011	-0.43, -0.56		
Household debt/GDP (%)	-0.026, -0.033	-0.74, -0.96		
Nonfin property/VA (%)	-0.036, -0.046	-0.43, -0.55		

Following Ziliak and McCloskey's (2004, 2008) critiques on the dismissal of statistically insignificant variables, the analysis considers the effects of variables that are statistically insignificant in the econometric regressions. For most variables, two different effects are reported since the coefficients of country-fixed effects and AR(1) country-fixed effects

regressions are slightly different. For public primary education expenditures, only one value is reported, since the values coming from country-fixed effects and AR(1) country-fixed effects regressions are the same at three-digit level.

Table 8 shows that different measures of financialisation have very similar effects on total public education expenditures and public healthcare expenditures. The impact is the largest in household debts and domestic credits given to the private sector. A one-standard-deviation change in household debt/GDP respectively reduces both yearly growth in public education and public healthcare expenditures by 0.98–1.00 percentage points. Similarly, a one-standard-deviation change in domestic private credit/GDP decreases growth in both public education and in public healthcare expenditures by 1.17–1.19 percentage points. A one-standard-deviation change in FIRE VA/GDP reduces yearly growth in public education expenditures by 0.90–0.91 percentage points and yearly growth in public healthcare expenditures by 0.89–0.91 percentage points. The magnitudes of financialisation variables are larger when growth in public primary and secondary education variables are separately examined.

## **6. Does financialisation create opportunities that successfully replace public spending in education and healthcare?**

A group of studies approaches financialisation by focusing on the ‘financialisation of the everyday’ (van der Zwan, 2004), which involves the replacement of services previously provided by the welfare state with the purchase financial products. Indeed, FESSUD (2017) notes that during the new wave of financialisation starting in early 1980s, “the expansion (of capital investments) ... aimed mainly to the systematic invasion of the territory formerly occupied by the Welfare State (health, education, pensions, and so on). In particular, the rules underlying the introduction of the Euro and the austerity policies implemented after the crisis went a long way towards the dismantling of the Welfare State in the EU, and the systematic privatisation of health, education, and social security services (including pensions).” Similarly, Karwowski (2019) discusses the growth of the student loan market and private health insurance schemes as an aspect of the ‘financialisation of social infrastructure.’

Following these arguments, this section of the paper will examine whether the new opportunities created with ‘financialisation of the everyday’ can support the education and healthcare sectors, while the growth of governments’ social expenditures are declining in the EU countries. The paper first examines the case of the United Kingdom, in which significant tuition fees are introduced in universities and the access to university education is supported by growing student loans. Next, the paper will examine the cases of the Netherlands and Germany, in which private insurance schemes are used for replacing the public insurance schemes in healthcare.

### **6.1 Higher education reforms in the United Kingdom**

Until 1998, the United Kingdom had a university education system with no fees for full-time domestic students. Nevertheless, the students would still have to cover their living expenses, and the majority of the students covered their expenses through a government loan. In 1998, Tony Blair government introduced a package of education reforms including the tuition fees due to the government’s concerns on declining quality in the universities (Murphy, Scott-Clayton, and Wyness, 2018). According to the 1998 reforms, the tuition fees were capped at £1,000 per year, and a new income contingent loan (ICL) system was introduced across the constituent countries (England, Scotland, Wales, and Northern Ireland) of the United Kingdom. According to the ICL system, the borrowers started to pay their loans after graduation and only those who work and earn over £10,000 per year had to start repayment of their loans. In 2006/07, the cap for the tuition fees in England increased to £3,000 per year and accordingly the threshold income for repayment of loans rose to £15,000. The education reforms implemented in 2012/13 increased the cap for the tuition fees in England to £9,000 and the minimum income threshold for repayment of loans to £21,000. Last, the cap for the tuition fees and minimum income threshold for repayment in England respectively were adjusted to £9,250 in 2017/18 and to £25,000 in 2018/19.

Scotland also introduced the tuition fees of £1,000 per year in 1998. However, Scotland diverged from the rest of the United Kingdom, as the tuition fees in Scotland were replaced with an endowment scheme in 2001 (Sa, 2014). Scottish-domiciled students were required to pay £2,000 after graduation. In 2007, the Scottish government entirely removed the fees on the university education for Scottish-domiciled students. In Wales, the cap on tuition fees increased to £9,000 in line with England; however, the Welsh government started to pay the tuition fee costs over £3,465 of Welsh students studying at any university in the UK. In 2012, the tuition fees in Northern Ireland were also capped at £3,465 for students in Northern Ireland.

The government’s contribution to tertiary education also significantly declined while the ‘reforms’ in the university education system in the UK were implemented. Between 1997 and 2017, public expenditures in the UK on tertiary education declined by 30.9% in real terms<sup>9</sup>. Moreover, public tertiary expenditures’ share in GDP dropped from 0.57% in 1997 to 0.26% in 2017.

With these education reforms, England, Northern Ireland, and Wales became outliers in the EU in terms of student fees in higher education. Table 9 demonstrates that the most common annual student fees in first-cycle higher education among home fee-paying students in all EU countries except England, Northern Ireland, and Wales is lower than €3,000 and is zero in six EU countries.

**Table 9: Most common annual student fees in first-cycle higher education among home fee-paying students in the EU-28 countries (2018/19)**

Student fee	Countries
> EUR 3000	England, Northern Ireland and Wales
Between EUR 1001 - 3000	Hungary, Ireland, Italy, Netherlands, Portugal, Spain
Between EUR 101 - 1000	Belgium, Bulgaria, France, Luxembourg, Romania
Between EUR 1 - 100	Croatia, Czech Republic, Germany, Latvia, Poland, Slovakia, Slovenia
No fees	Austria, Cyprus, Denmark, Greece, Finland, Malta, Scotland, Sweden

Source: European Commission/EACEA/Eurydice (2018)

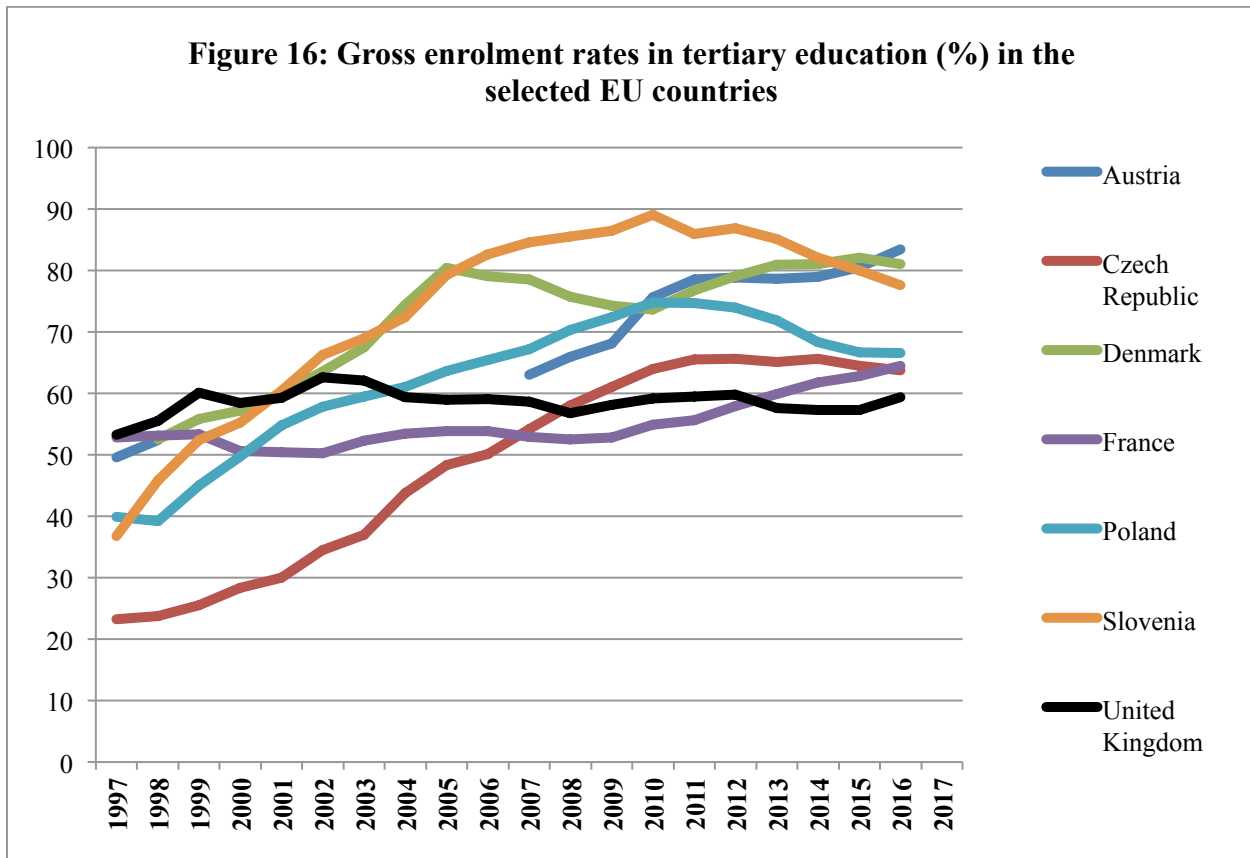
Note: Latvia and Estonia are not classified due to lack of data.

In addition, following the introduction of student fees and the income-contingent loan scheme, the increase in gross tertiary enrolment rate has been small in the United Kingdom compared to other EU countries. Figure 16 reflects that gross tertiary enrolment rates of countries like Austria, the Czech Republic, Denmark, France, Poland, and Slovenia, which had gross tertiary enrolment rates lower than that of the United Kingdom, exceeded the enrolment

<sup>9</sup> Author’s calculations based on Eurostat (2019) and World Bank’s (2019) World Development Indicators.

rates in the United Kingdom by 2016. According to the World Bank's (2019) World Development Indicators data, in 1997 the United Kingdom had the second largest gross enrolment rate in tertiary education among the 25 EU countries with available data. Following the higher education reforms, by 2016 the United Kingdom dropped to 22<sup>nd</sup> place in terms of gross enrolment rate in tertiary education among the 27 EU countries with available data.

Different empirical studies find different effects of the tuition fees and income contingent loans. Dearden, Fitzsimons and Wyness (2011)'s estimations for 1992–2007 show that a £1,000 increase in tuition fees reduced the probability of university participation at the age of 18–19 by 3.9 percentage points in England, Wales, and Northern Ireland. However, Azmat and Simion (2018) find smaller negative effects and estimate that the 2006 and 2012 reforms reduced tertiary enrolment in England respectively by 0.7% and 0.2%.



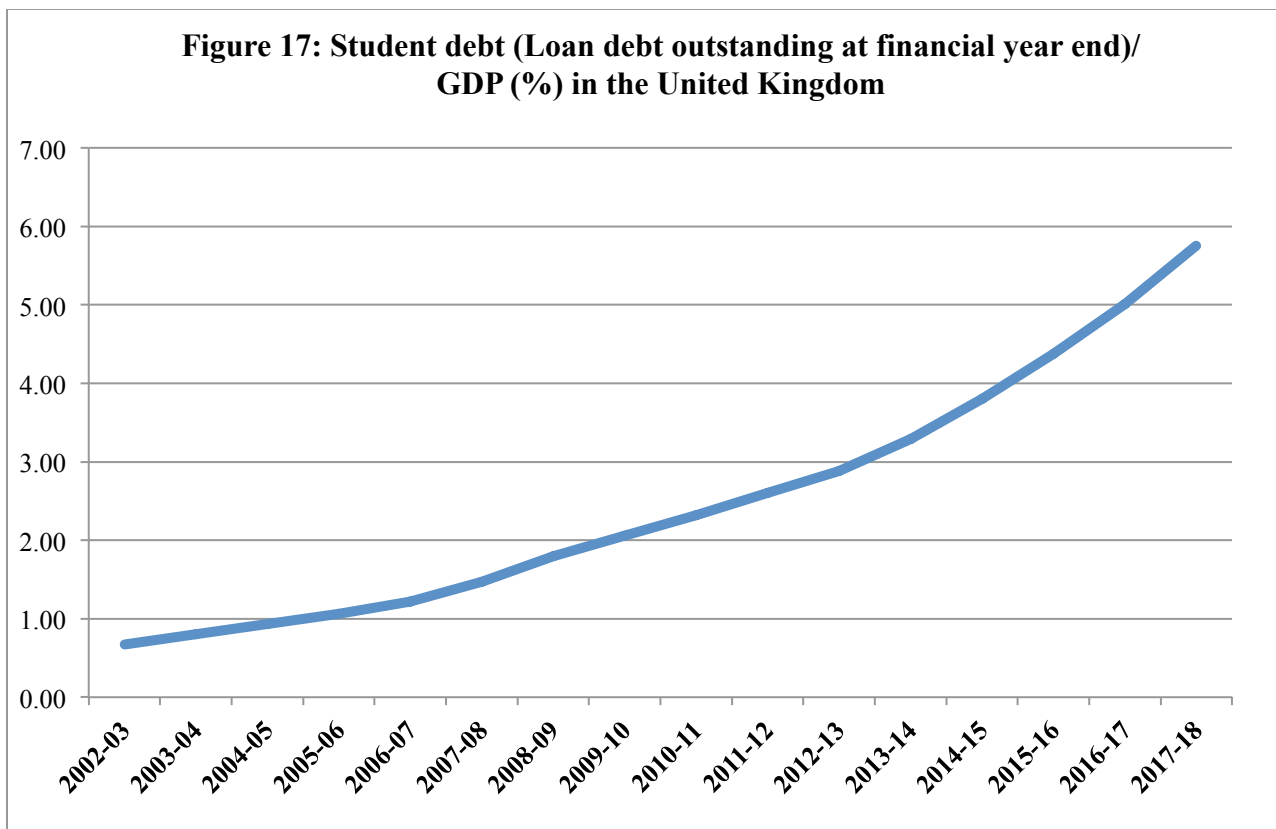
Source: World Development Indicators (2019)

Note: The gross enrolment rate in tertiary education (%) is the ratio of total enrolment, regardless of age, to the population of the age groups that officially corresponds to the level of education shown.

On the other hand, Sa's (2014) estimations on 2001 reforms in Scotland show that a £1,000 reduction in yearly tuition fees led to an increase of 8% on student applications. Moreover, Sa also shows that the tuition fee increases in 2012 significantly reduced the student

applications in higher education in England and the negative effects are larger for the subjects with lower employment probabilities and lower average wages after graduation. Moreover, the increase in tuition fees in 2012 significantly reduced the attendance of students in England according to Sa's estimations.

The higher education system that increasingly is based on student loans also accelerated the accumulation of the student debt. Figure 17 shows the student debt (loan debt outstanding at financial year end) as a share of GDP (%) in the United Kingdom. The student debt/GDP ratio that was 0.7% in 2002/03 increased to 1.2% in 2006/07. Nevertheless, with the introduction of £3,000 and £9,000 university fees in England, the student debt/GDP ratio in the UK respectively jumped to 2.9% in 2012/13 and to 5.8% in 2017/18. The rapidly rising student debt also significantly contributes to total household debt in the UK, which is likely to significantly reduce the growth rate and growth of tax revenue and have further negative effects on public education and healthcare expenditures in the UK as empirically shown in Section 5.2.



Source: Student Loans Company (2019) and ONS (2019).

Note: GDP in the denominator of the ratio (%) is GDP in the second year of the given school year.

## 6.2 Private healthcare insurance schemes in Netherlands and Germany

Another aspect of financialisation is the extension of private insurance companies' role in the financing of healthcare. Since WWII, the majority of European governments successfully implemented universal public insurance schemes for healthcare. However, the Netherlands and Germany are the two EU economies where compulsory private insurance schemes have been playing an important role in the financing of healthcare expenditures. Unlike in any other European Union country, compulsory private health insurance schemes finance more than half of the healthcare expenditures in the Netherlands (Table 10; Eurostat, 2019). In Germany, citizens have the choice of public or private insurance, and compulsory private health insurance financed 7.6% of all health expenditures in 2015, which is larger than all other European Union members except the Netherlands (Table 10; Eurostat, 2019)<sup>10</sup>.

**Table 10: Share of compulsory and voluntary health insurance contributions in all healthcare expenditures (%) in the selected EU countries and the US in 2015**

	Compulsory private health insurance as a share of all health expenditures (%)	Voluntary health insurance as a share of all health expenditures (%)	Compulsory + voluntary health insurance as a share of all health expenditures (%)
Netherlands	55.1	6.0	61.1
Germany	7.6	1.5	9.1
France	0	13.0	13.0
Italy	0	1.5	1.5
Spain	0	4.6	4.6
United Kingdom	0.1	3.4	3.5
United States	32.4	2.7	35.1

Source: Eurostat (2019) and OECD (2019).

The Netherlands had the choice of public or private insurance between 1941 and 1986. In 1986, the Netherlands abolished the choice between public and private insurance and simply moved to a system in which higher earners were excluded from the public insurance scheme (Thomson and Mossialos, 2006). In 2006, the Netherlands made private health insurance mandatory for everyone with the Health Insurance Act (*Zorgverzekeringswet*, ZVW). The new system replaced the dual system in which two-thirds of the population was subject to mandatory public health insurance and the rest of the population relied on private insurance (Schut, Sorbe, and Høj, 2013). As a part of the scheme, the citizens started to pay a flat premium for the basic scheme irrespective of income, age, or health status. The citizens' contributions cover 50% of the

<sup>10</sup> Starting in 2016, all employers in France were required to provide private complementary health insurance to their employees as a part of the National Inter-Professional Agreement (NIA) (Franc and Pierre, 2015). However, this paper will not discuss the French case, as the long-term outcomes of this policy are not yet observed and the National Inter-Professional Agreement does not focus on primary health insurance.

total premium costs, and the other half of the premium is covered by employers' contributions (Van Ginneken, Busse, and Gericke, 2008). Moreover, the insurance companies became obliged to accept all applicants to the basic scheme, which is mandatory for all citizens (Maarse, Jeurissen and Ruwaard, 2016). Nevertheless, the companies can reject the applications for complementary schemes and premiums can vary.

Following the 2006 Healthcare Reforms, private health insurance companies in the Netherlands experienced losses in 2007–2008 (Schut, Sorbe, and Høj, 2013). However, the health insurance companies started to profit in 2009 with the introduction of differentiated supplementary health insurance packages and rising concentration in health insurance markets. By 2011, the four largest health insurance companies controlled 90% of the health insurance markets. Moreover, with the 2006 reforms, the administrative costs of healthcare insurance companies increased, since a highly complex product classification system called the DBC system was introduced and number of contractual arrangements and information requirements from supervisory bodies and health insurers also increased.

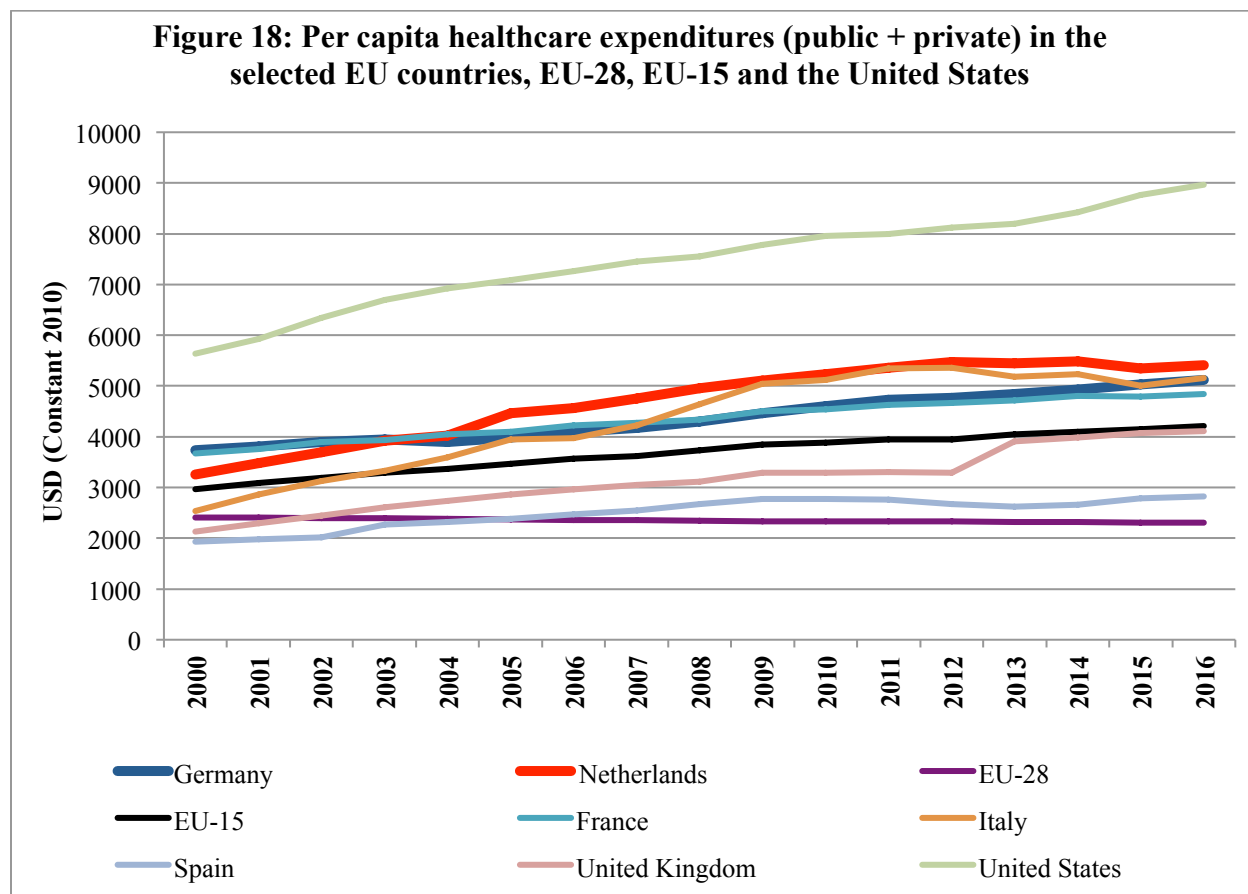
The life expectancy and cost of healthcare expenditures data reflects that the Netherlands healthcare system based on private health insurance schemes is less efficient than schemes in the rest of the EU countries. First, the per capita healthcare expenditures in the Netherlands was between 28.0% and 38.8% higher than the EU-15 average in 2006–2016 (Figure 18). Moreover, the per capita healthcare expenditures in the Netherlands were between 93.3% and 135.3% larger than the EU-28 average in the post-2005 period and were larger than all large European economies (France, Germany, Italy, Spain, and the United Kingdom). Nevertheless, the life expectancy in the Netherlands was lower than the EU-15 average and only 0.6–1.1 years higher than the EU-28 average in the same period. In addition, the life expectancy in the Netherlands was respectively lower than Italy and Spain by 1.7 and 1.8 years in 2016, even though Italy and Spain's per capita healthcare expenditures were lower. The high healthcare costs and relatively lower life expectancy in the Netherlands show similarities with healthcare in the United States, where historically private healthcare insurance schemes play a significant role in its healthcare system (Cacare, 2010).

The other EU economy with significant use of compulsory private health insurance, Germany, introduced a choice between public and private insurance in 1970 (in West Germany) by allowing white-collar employees with lower incomes to enrol in public statutory health insurance (GKV, Gesetzlichen Krankenkassen) (Thomson and Mossialos, 2006). Before 1970, GKV only covered blue-collar workers. However, the distinction between white- and blue-collar workers was eliminated in 1989, and the public or private health insurance choice became available for blue-collar workers above a certain income level. The Health Care Structure Act of 1993 allowed workers the right to switch between funds freely, irrespective of occupation, starting in 1996 (Busse et al., 2017).

Currently all pensioners, employees below an income threshold, and non-earning dependants are included in GKV. Individuals above a certain income level (the compulsory



insurance threshold) and the self-employed can keep statutory health insurance or can switch to private health insurance on a voluntary basis (Busse et al., 2017; Panthöfer, 2016). However, shifts between the two systems are highly regulated. Once the individual opts up from the public insurance system, returning back to the public insurance system is restricted and only possible when the individual loses the criteria for being eligible for the private insurance threshold (e.g., annual income regularly falling below public health insurance income or being unemployed). Moreover, individuals over the age of 54 cannot switch between public and private insurance systems under any circumstances. Also, the private insurance companies are required to offer long-term contracts with guaranteed renewing rates (Hofmann and Browne, 2013). However, private insurance companies are allowed to deny coverage and have substantial freedom to decide on the premium and the extent of coverage (Polyakova, 2016).

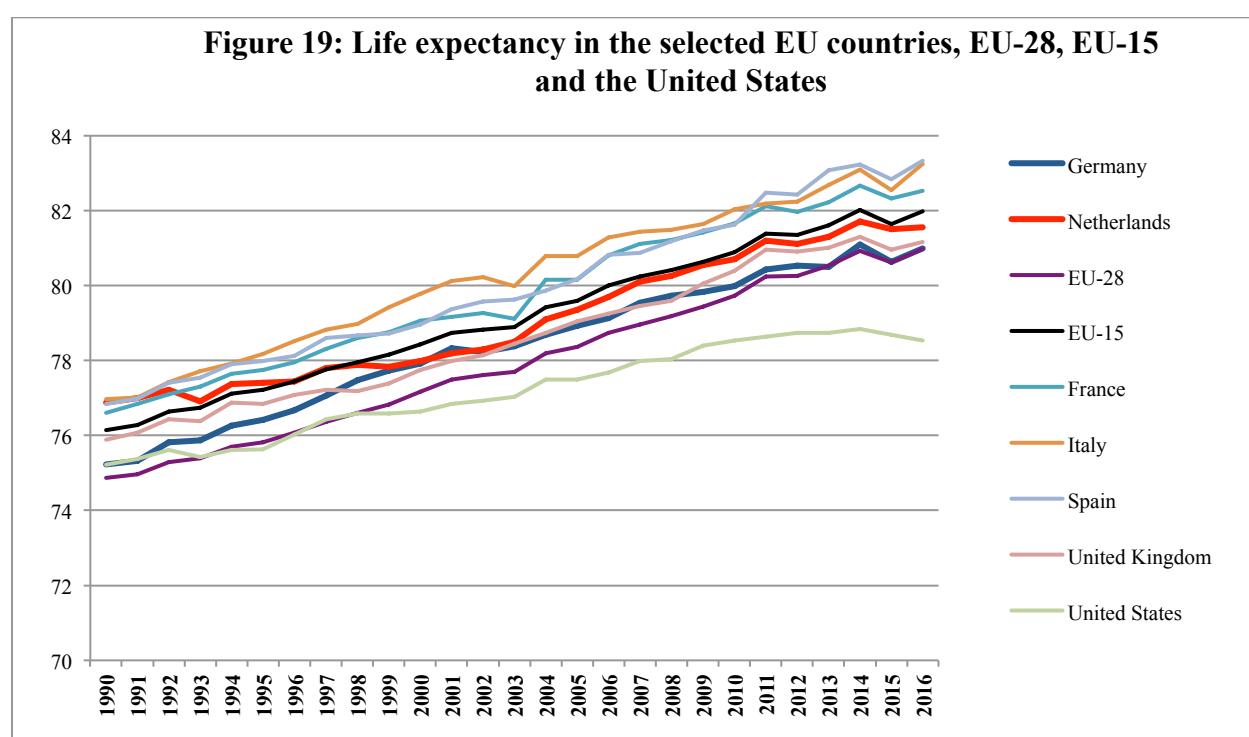


Source: Author's calculations based on the World Bank (2019).

Several empirical studies examine the outcomes of the dual health insurance system in Germany. Panthöfer (2016) for 1998–2011 empirically finds that healthy individuals were more likely to switch to private insurance plans and pay low insurance premiums, whereas sick individuals prefer public insurance systems. Panthöfer's findings reflect that private insurers

screened their applicants and determined insurance premiums accordingly. Moreover, the German government raised premiums to compensate for the costs for rising average risk. Similarly, in another empirical analysis for 2000–2007, Grunow and Nuscheler (2014) find that less healthy individuals were more likely to switch to public insurance and more healthy individuals were likely to stay in public insurance. This generated an ‘adverse selection’<sup>11</sup> problem, since the public insurance system was left with relatively unhealthy individuals.

In terms of the overall outcomes, although per capita healthcare expenditures were 21.6% greater in Germany than the EU-15 average in 2016 (Figure 18), life expectancy in Germany was 1.0 year lower than the EU-15 average (Figure 19). Hence, the healthcare system in Germany was less efficient compared to the EU-15 average.



Source: World Bank (2019) and author’s calculations based on the World Bank. The life expectancies for EU-28 and EU-15 are population-weighted averages of life expectancies in the countries included in each group.

<sup>11</sup> Adverse selection is a term in the economic literature for describing a case where market participation is influenced due to asymmetric information between buyers and sellers and therefore an efficient equilibrium in the market cannot be reached.

## **7. Conclusion and policy implications**

This paper examines the impact of financialisation on social infrastructure in the European Union. The empirical results show that financialisation slowed the growth in tax revenues in the European Union by reducing economic growth and the share of tax revenues in GDP. The lower growth in tax revenues also reduces the growth rates of public education and public healthcare expenditures by limiting the sources for the public sector. The negative impact of financialisation on public social expenditures is most visible through its effect on household debts, domestic credits given to the private sector, and the share of the FIRE sector in GDP. Moreover, the empirical estimates found a negative impact of financialisation on public primary, secondary, and tertiary education expenditures.

Public social expenditures are crucial determinants of long-term growth, productivity, and overall economic development. For relieving the negative effects of financialisation on public education and healthcare expenditures, EU countries could consider tightening regulations in the financial markets and increase the taxes on financial transactions. This would push firms to direct their profits towards non-financial activities and physical investments. Moreover, a significant increase in taxes on financial transactions would generate extra tax revenues that would finance possible increases public social expenditures.

This paper also hinted that the financialisation of social infrastructure does not lead to improvements in education and healthcare. Following the higher education reforms, the tertiary enrolment stagnated and the burden of student loans increased geometrically in the United Kingdom. The expansion of student loans in the UK is also an important impediment on consumption and growth in the UK. Moreover, the Netherlands, whose healthcare system is based on private insurance schemes, has a life expectancy lower than the EU-15 average even though per capital healthcare expenditures in the Netherlands are significantly higher than the EU-15 and EU-28 averages. Several studies on Germany (e.g., Panthöfer, 2016; Grunow and Nuscheler, 2014) show that the dual healthcare system based on mandatory public and private health insurance schemes led to an ‘adverse selection’ problem and increased the costs and premiums in the public health insurance schemes. The cases of the UK, the Netherlands, and Germany reflect that policymakers should be cautious on implementing systems based on student loans and private insurance schemes.

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## Appendix 1: The impact of four-year averages of measures of financialisation on the growth of public social expenditures

This appendix examines the direct impact of financialisation on public healthcare expenditures and public social expenditures using the moving average of one-to-four year lags of the measures of financialisation. Hence, the moving average of each indicator of financialisation is:

$$\bar{x} = \frac{x_{t-1} + x_{t-2} + x_{t-3} + x_{t-4}}{4}$$

where  $x_i$  is a measure of financialisation. Table A1.1 and Table A1.2 respectively test the direct impact of financialisation on the growth of public healthcare and education expenditures. The four-year moving averages of FIRE VA/GDP, Credit/GDP, Nonfin debt/GDP, and House debt/GDP have, at 5% level, a significant negative impact on the growth of public healthcare expenditures and public education expenditures. The estimations also show that Nonfin property/VA has a negative impact on the growth of public healthcare and education expenditures; however, the effects are insignificant at 10% level.

**Table A1.1: Impact of four-year averages of measures of financialisation on the growth of public healthcare expenditures (%) in the EU-28, fixed-effects regressions (1991–2017)**

	(1)	(2)	(3)	(4)	(5)
Fire VA/GDP (4y average)	-0.856*** (0.138)				
Credit/GDP (4y average)		-0.051** (0.020)			
Nonfin debt/GDP (4y average)			-0.048** (0.020)		
House debt/GDP (4y average)				-0.156*** (0.033)	
Nonfin property/VA (4y average)					-0.035 (0.078)
(Log(GDP per capita)) <sub>t-1</sub>	-2.162 (1.809)	6.166 (3.935)	-1.742 (4.524)	4.181 (3.597)	-5.151** (2.414)
Urbanisation <sub>t-1</sub>	-0.224** (0.090)	-0.492 (0.368)	-0.242 (0.177)	0.195 (0.138)	-0.614** (0.229)
(Trade/GDP) <sub>t-1</sub>	0.010 (0.011)	0.020 (0.016)	0.043 (0.026)	0.010 (0.024)	0.008 (0.030)
(Log(Inflation + x)) <sub>t-1</sub>	0.915 (1.058)	-1.625 (1.060)	1.399 (1.353)	0.845 (1.281)	3.788*** (1.315)
Pop Growth <sub>t-1</sub>	0.280 (0.679)	1.472** (0.640)	1.301 (0.776)	1.025 (0.709)	0.168 (1.080)
Left government <sub>t</sub>	0.483 (0.645)	0.750 (0.529)	0.985 (0.665)	0.795 (0.609)	0.120 (0.805)
Constant	51.288** (21.707)	-21.179 (45.195)	36.098 (45.993)	-50.613 (36.030)	92.109*** (29.723)
Observations	574	344	368	368	502
R-squared	0.072	0.079	0.123	0.204	0.077
Number of Countries	28	28	18	18	27

Notes: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Country-clustered standard errors in parentheses.

**Table A1.2: Impact of four-year averages of measures of financialisation on the growth of public education expenditures (%) in the EU-28, fixed-effects regressions (1991–2017)**

	(1)	(2)	(3)	(4)	(5)
Fire VA/GDP (4y average)	-0.635*** (0.142)				
Credit/GDP (4y average)		-0.072*** (0.016)			
Nonfin debt/GDP (4y average)			-0.038** (0.014)		
House debt/GDP (4y average)				-0.117*** (0.030)	
Nonfin property/VA (4y average)					-0.054 (0.067)
(Log(GDP per capita)) <sub>t-1</sub>	-1.082 (3.087)	-5.725 (4.446)	1.269 (2.377)	4.987** (1.999)	-1.247 (2.929)
Urbanisation <sub>t-1</sub>	-0.297** (0.139)	-0.190 (0.240)	-0.341* (0.183)	-0.002 (0.179)	-0.525** (0.216)
(Trade/GDP) <sub>t-1</sub>	0.012 (0.017)	0.024 (0.024)	0.026 (0.017)	-0.002 (0.013)	0.021 (0.026)
(Log(Inflation + x)) <sub>t-1</sub>	-0.220 (0.917)	-0.280 (0.691)	-0.011 (1.196)	-0.444 (1.003)	0.473 (1.104)
(Pop Growth Age 6-10) <sub>t-1</sub>	-0.452*** (0.143)	-0.232 (0.266)	-0.508** (0.200)	-0.261 (0.187)	-0.641*** (0.167)
(Pop Growth Age 11-17) <sub>t-1</sub>	0.154 (0.174)	0.334* (0.196)	0.036 (0.215)	0.096 (0.199)	0.216 (0.242)
(Pop Growth Age 18-23) <sub>t-1</sub>	-0.004 (0.148)	0.112 (0.224)	-0.047 (0.204)	0.033 (0.188)	0.031 (0.181)
Left government <sub>t</sub>	1.178** (0.512)	0.886 (0.752)	1.366* (0.682)	1.232* (0.615)	0.992* (0.530)
Constant	42.873 (32.108)	79.058* (43.607)	14.707 (26.317)	-43.242 (26.997)	49.463 (31.392)
Observations	575	345	368	368	503
R-squared	0.094	0.101	0.151	0.192	0.087
Number of Countries	28	28	18	18	27

Notes: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Country-clustered standard errors in parentheses.

## Appendix 2: Determinants of austerity measures on social infrastructure in the EU-28 countries

This appendix examines the impact of one-to-four-year lags of growth in tax revenues on the probability of implementing austerity measures on total public healthcare, total public education, public primary, public secondary, and public tertiary education expenditures in the EU-28 in 1991–2017. Using probit analysis, Table A2.1 reflects the factors that influence the probability of reducing total public healthcare, total public education, public primary, public secondary, and public tertiary education expenditures within the observed year. For most of the lags of growth in taxes, the growth of taxes at 5% significantly reduces the probability of implementing austerity measures on public social expenditures. Moreover, the results show that a left-wing government, at 10% level, is significantly less likely to reduce total public education expenditures, and at 5% level is significantly less likely to reduce public secondary education expenditures.

**Table A2.1: Determinant of austerity measures in social infrastructure in the EU-28 countries in 1991-2017 (no reduction in public social expenditures=0, reduction in public social expenditures=1): Marginal effects from probit analysis**

	<i>Health</i>	<i>Education (Total)</i>	<i>Primary education</i>	<i>Secondary education</i>	<i>Tertiary education</i>
	(1)	(2)	(3)	(4)	(5)
(Growth Tax) <sub>t-1</sub>	-0.008*** (0.002)	-0.004** (0.002)	-0.008*** (0.002)	-0.010*** (0.003)	-0.005** (0.002)
(Growth Tax) <sub>t-2</sub>	-0.000 (0.002)	-0.006*** (0.002)	-0.006*** (0.002)	-0.005** (0.002)	-0.005** (0.002)
(Growth Tax) <sub>t-3</sub>	-0.006*** (0.002)	-0.002 (0.002)	-0.005*** (0.002)	-0.008*** (0.003)	-0.004 (0.002)
(Growth Tax) <sub>t-4</sub>	-0.005*** (0.002)	-0.007*** (0.002)	-0.005** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)
(Log(GDP per capita)) <sub>t-1</sub>	-0.068 (0.047)	-0.097 (0.061)	-0.081 (0.053)	0.118** (0.056)	0.085 (0.052)
Urbanisation <sub>t-1</sub>	-0.001 (0.001)	-0.002 (0.002)	-0.002 (0.002)	-0.003 (0.002)	-0.001 (0.002)
(Trade/GDP) <sub>t-1</sub>	0.001** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
(Pop Growth) <sub>t-1</sub>	-0.040 (0.025)				
(Pop Growth Age 6-10) <sub>t-1</sub>		0.027** (0.011)	0.018** (0.009)		
(Pop Growth Age 11-17) <sub>t-1</sub>		-0.010 (0.010)		-0.046*** (0.011)	
(Pop Growth Age 18-23) <sub>t-1</sub>		-0.004 (0.010)			-0.048*** (0.010)
Left government <sub>t</sub>	-0.026 (0.031)	-0.067* (0.035)	-0.004 (0.035)	-0.137*** (0.036)	-0.058 (0.037)
Observations	647	648	648	648	648
Log likelihood	-287.59	-340.10	-331.92	-356.55	-361.58

Notes: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Coefficient is for discrete change of dummy variable from 0 to 1. Marginal effects for the non-dummy variables are calculated at the means.